

MAY 8 1929

AMERICAN JOURNAL of PHARMACY

SINCE 1825

A Record of the Progress of Pharmacy and the Allied Sciences

COMMITTEE ON PUBLICATION

Charles H. LeWall, Ph. M., Sc. D. Joseph W. England, Ph. M. J. W. Barnes, Pharm. D.
John K. Thrus, Ph. M. Arno Viehoever, Ph. D. E. Fullerton Cook, Ph. M.
Special Contributor, Henry Leffmann, A. M., M. D.
IVOR GRIFFITH, Ph. M., Editor

Vol. 101

APRIL, 1929

No. 4

CONTENTS

Editorial:

What is "Pharmacy?" 224

Original Articles:

The Cosmetic Urge. (Illustrated.) By Ivor Griffith, Philadelphia, Pa. 236

Some Recent Research Achievements in Pharmacy. By John C. Krantz, Baltimore, Md. 269

Comments on the Alcohol-Tests in the German Pharmacopeia. By Henry Leffmann, Philadelphia, Pa. 275

The Apothecary, a Literary Study. No. 34. Balzac's "Druggist Perfumer." By Edward Kremer, Madison, Wis. 276

The Norwegian Cod Liver Oil Industry. By Joseph W. England, Philadelphia, Pa. 299

Medical and Pharmaceutical Notes 299

News Items and Personal Notes 295

Book Reviews 299

Price \$1.00 per Number in Advance

Foreign Postage, 25 Cents Extra

Single Numbers, 20 Cents. Back Numbers, 50 Cents

Entered as Second-Class Matter at the Post Office at Philadelphia, Pa., Under the
Act of March 3, 1891.

Acceptance for Mailing at Special Rate of Postage Provided for in Section 1102, Act of
October 3, 1917. Authorized January 15, 1918.

PUBLISHED MONTHLY BY THE

Philadelphia College of Pharmacy and Science
43rd Street and Kingsessing Avenue, West Philadelphia, Pa.

American Journal of Pharmacy

ESTABLISHED IN 1823

Four preliminary numbers were published at different times until in 1829, when the publication of the regular volumes began. Since then the publication has been uninterrupted. During the period from 1829 to 1852 four numbers were published annually, except in 1847, when five numbers were published. From 1853 to 1870 six numbers were published. Since this time twelve numbers have been published annually.

MANUSCRIPTS should be sent to the Editor. It should be stated in this connection that the Editor does not assume any responsibility in connection with the views or investigations of contributors, other than to exercise general care in the selection of matter.

Contributors are allowed a reasonable number of copies of this JOURNAL, free of charge, if applied for when the proof is returned.

Reprints, if desired, must be applied for when the proof is returned. The table below shows the *approximate* cost of reprints, the make-up of the pages to be identically the same as in the JOURNAL. The actual cost may vary from the figures given, and will depend upon the amount of presswork, paper, binding, etc. Reprints containing half-tones may be expected to cost somewhat more than the rates given.

Copies with Titles	2 pp.	4 pp.	8 pp.	16 pp.
25 copies	\$1.75	25 copies	\$2.75	\$3.75
50 " " " " "	2.00	50 " " " " "	2.50	4.00
100 " " " " "	2.25	100 " " " " "	2.75	4.25
250 " " " " "	2.75	250 " " " " "	3.75	4.75
			10.00	12.00

Our readers will find it to their advantage to carefully consult the advertising pages when desiring to correspond with **STRICTLY FIRST-CLASS PARTIES.**

THE AMERICAN JOURNAL OF PHARMACY

VOL. 101

APRIL, 1929

No. 4

EDITORIAL

WHAT IS "PHARMACY"?

PHARMACY," so Remington wrote—"is the science which treats of medicinal substances. It embraces not only a knowledge of medicines and the art of preparing and dispensing them, but also their identification, selection, preservation, combination, analysis and standardization."

And Remington—the finest apostle of real Pharmacy that America ever knew—penned that definition nearly a half century ago—penned it with so keen an understanding of the true basis of pharmacy that the current revision of the famous text-book "The Practice of Pharmacy" which still bears his name, carries this same definition without having suffered a single change.

Indeed basic definitions need never change.

"But," objects some one, "Pharmacy *has* changed, and for the worse. The 'Pharmacy' of today is in no wise to be compared with the good old, dignified old, serviceable old 'Pharmacy' of Remington's days."

"Are not the beloved old apothecary and his sweet idyllic days clean gone? The druggist today is largely a merchant of parts. His day of peace ended when he abandoned the colored lights in his windows and added fly paper to his stock of medicines. He has been adding things ever since. It is a long time since drugs made a druggist. Nowadays it is Kodaks, Cuticura, Chesterfields, Kotex, Kutanex and cutlery.

"What of the chain stores, lunch counters, soda fountains, one-

cent sales—silk stockings—jewelry, Victrolas, et al., ad nauseam—so symptomatic of the modern pharmacy?"

To which we react—and promptly—with, "those things are not *Pharmacy*, and never were nor will be." The definition in Remington's is as applicable as ever it was—indeed much more so.

For the "art of preparing and dispensing medicines and their identification, selection, preservation, combination, analysis and standardization" while no longer confined to the corner pharmacy—is more of an art than ever it was—more of a science than ever it was—and much more expansively practiced.

Certainly the dear old apothecary is gone. So has the fine old family doctor—who once cavorted over fifty fields of medical service now patrolled by fifty specialists.

Where is the obstetric, gynecologic, chirurgic, odontologic, neurologic, psychopathic, chiropedic, oto-laryngologic, galvano-therapeutic, pediatric, urologic medico of fifty years ago?

Is medicine any the worse for his passing out of the picture? Is the health of the nation any the worse for specialization in medicine?

Has the basic definition of medicine changed just because the externals of medicine are so different? Of course not! And it never will change—any more than have the ten commandments changed just because it is customary in this hectic age to be lenient and liberal in our interpretation of them.

The *Pharmacy* of today is better *pharmacy*, better insofar as it serves in a better way—far better, far truer to its definition than ever it served before.

Of course its externals have changed!

No longer is the corner drug store the only habitat of the calling. For it has wandered far afield. The demand for medicinals is larger than ever in history—the range and scope of medicinals are likewise enlarged—the need for uniformity and stability in medicinals is more exacting than ever, and to cope with all of these requirements was much beyond the capacity of the corner drug store man.

Is it surprising then that specialization came his way too, exactly as it did in medicine? That definition in Remington's seemed once to be quite within the compass of one practitioner, but not so

today. For the identification of drugs is now a science of itself—their selection, their stabilization, their analysis, their standardization—all are specialties—all are single sciences.

So has Pharmacy ramified.

So has its practice passed from the hands of the "old apothecary" into other but yet capable hands.

The tremendous drug industry—huge drug collecting organizations and milling concerns, large organic and inorganic chemical manufacturers, immense pharmaceutical establishments, biologic laboratories, control laboratories, institutes of pharmaceutic research—all of these are the pharmacies of today, with the corner drug store only a small—a very small corner of a very large picture.

Mind you, this is not in derogation of the corner establishment that functions in a high, serviceable way. For as the important, prescription-compounding, medicine-supplying station the corner drug store, in spite of its ornamentation and disguise, is a valuable serviceable spot in every community.

IVOR GRIFFITH.

ORIGINAL ARTICLES**THE COSMETIC URGE***

By Ivor Griffith, P. D., Ph. M.

THIS LECTURE was announced as one which would deal with the historic and hysterics of the art and science of Cosmetics. Had the lecturer contemplated upon his Greek more carefully he might have selected for his subject a topic much more limiting than the Cosmetic Urge.



Ivor Griffith

For even the dictionaries seem to have their own troubles about defining the word Cosmetic. One pronounces it a word borrowed from the Greek (*κοσμεω*) kosmeo meaning "to adorn" or "to decorate." Another claims its origin to be (*κοσμος*) kosmos, meaning "harmony" or "order"—and Webster insists that a cosmetic is an agent which "improves on beauty."

Of the group, insofar as the boundaries of this lecture go, the most fitting of the definitions seems to be that which refers to cosmetics as decorating commodities. Certainly there is very little of "harmony" or "order" in much of the result of the cosmetician's handiwork as brought to our notice by his or her overpowdered—overpainted patrons of this day and generation.

THE COSMO-POLITAN SPLURGE

And so far as Webster's definition goes, namely "improving on beauty," we insist that it takes entirely too much for granted—at least in this adorning age, when the milk-and-water cosmetic urge of mid-Victorian days has grown into a fierce cosmopolitan splurge which is not a bit finicky about what it starts out to "improve."

The history and mystery of decorating commodities, therefore, such as paints, powders, pastes, polishes, pyroxylin lacquers, perfumes, pastilles and other paraphernalia, will have our attention dur-

*One of a Series of Popular Science Lectures given at the Philadelphia College of Pharmacy and Science (1929 Season).

ing the hour given to us to speak. Obviously too, there must be a preponderance of femininity to the discussion since it is given mostly to the weaker, though not the meeker sex, to suffer or profit at the cosmetician's hands.

**COEDUCA-
TIONAL
COSMETICS**

The rougher, ruder sex need not infer from this however, that it will be immune from certain caustic criticisms which are bound to effervesce during the evening—for one only has to conjure a vision of rows of even shoudered, evil-smelling bottles, on parade at barber shops to realize that the he-man, too, is a pretty good patron of perfume and paste and pooh-bah. And now that the barber shop is a co-educational institute—and the *Police Gazette* has become partly effeminate, both sexes must share a lot of good-natured ridicule.

Let us consider primarily just why the decorative instinct should be so manifest in the female of the human species. Oddly enough it seems the fashion of the animal world for the male to be vastly more attractive—more striking in appearance than the female. Witness the contrast between the proud-strutting rooster and the timid brown hen; between the majestic lion, beau brummel of tropic plains and his homely, ill-tempered old shrew of a wife; between the bull moose of the backwoods, resplendent in his artistry—lordly in poise—with his widespread branched antlers towering nigh to the tree-tops, and his dreary, weary looking companion cow, whose antlers are ingrown and who like an overgrown mule, affords a tragic contrast to her stunning husband.

And with some evolutional exceptions, the general rule of the animal world seems squarely to be that the husband of the species is more lovely than the wife. But let us not overlook the cosmetic moral in the thought that, in spite of her unloveliness, Leo loves his Lena with a life-long devotion—and the antlered moose will lose his life rather than let a rival steal his homely mate.

Still there is no telling how much more attractive the lioness would be, were her pouting lips done up in mercurochrome—her eyes ensparkled with belladonna—her eyebrows black with sulphide of antimony—and her furry cheeks touched up with paint and powder, fresh from the Jungle Beauty Parlors.

I leave it to your imaginations to wonder what Leo might say or do, did he come home from work one African eve to find his mate so decorated.

The Kingdom of Man has had its like experiences—and many a lion of the genus *Homo*, has come from work one American eve to find his mate so decorated.

And what did he say?

Well, just what the lion said—*Nothing!!*

It would be hazardous in an audience so preponderantly feminine, for a mere male to opinionate adversely as to the artistic superiority of the one sex over the other—insofar as the genus *Homo* is concerned.

A sort of a happy compromise might be reached if one agreed that in fundamental beauty of line and form there is little to choose between the idealized David of Michael Angelo and the similarly idealized Venus de Milo—except perhaps that the latter is not “all there.” But these are verily idealized—and are unfair to compare.

And since beauty has an unencompassed definition and within its nuances of meanings holds to some, more importance internally than externally—the kind of beauty which is not skin deep—it were better for us to omit comparisons except those which are purely physical and ornamental.

Going back to the dawn of that epochal day—when a queer, hairy pair of creatures emerged from over the hills of chaos and followed the sun to its setting—what a vision of ugliness we see—judged by today's opinions.

From skulls deep hidden by the sands of time and upturned by greedy minded grandchildren, we fabricate the face and form of these, our long-gone kin.

And what faces and forms they are—The Heidelberg, Piltdown, Cro-Magnon and Java—what a queer quartette they make. Yet they were our ancestors—ugly and unrefined.

Such differences there may have existed then between the sexes are matters of pure conjecture. Yet I venture the biologic guess that in accord with the rest of her animal plans, Nature had given to early man a physical design more attractive than that of his whining mate.

Since then, however, Dame Nature has exercised most profoundly that feminine prerogative of changing her mind—for Nature has conspired with Art to effect such an evolutional differentiation between the sexes that Woman today reigns supreme as the most beautiful creature of universe.

I do not exactly know where the days of Adam and Eve belong in the evolutional time table—yet we must concede that even then, the

female had improved a lot, at least in physical attractiveness, that is if the interpretation of artists is in any way to be relied upon.

Burns—the *one* generous Scotch poet—was quite an authority on women, and this is how he sang of Nature's creation of Eve—after Adam.

"Her 'prentice hand She tried on Man
And then she made the lasses O!"

It is not clear whether the O! is an expression of content or of contempt.

Strangely enough, in those early chapters of Genesis—after the recital of the creation of the cattle—the whales—the birds—and other animals, in each instance the sonorous claim is made that

"God saw that it was good."

But no such claim is made when the first anaesthesia, formed from a rib of old Adam's, his apple-tempted partner. Yet even the staid scripture suggests that Eve was gentle, sweeter and more beautiful by far than her mud-made comrade.

However, it is a long time since Adam and Eve and it is very evident today that evolution has so changed matters from a decorative-ornamental standpoint that the current Cleopatra—far surpasses her Antony in physical attractiveness.

**EINSTEIN AND
BEAUTY**

Of course our judgment of beauty is largely a matter of relativity—and much prejudiced within a period or people. Thus the modern Chestnut Street flapper—perhaps to flipper eyes a marvel of grace and beauty—yet would in Borneo or Madagascar be slaughtered out of sheer charity.

The customs of a race or a time are totally ridiculous to another people or period. In South America women of *certain* tribes file their teeth or dye them dark the more readily to enmesh their victims—who just love teeth that look like the cogs of a fly-wheel. That is their idea of beauty. In North America women of *uncertain* minds bleach their hair an anemic catarrhal yellow just because a scenario writer once wrote that "gentlemen prefer blondes." And that is another idea of beauty.

Speaking of operations—who remembers the custom of two or three decades ago when drilling holes in young ladies ears was quite as popular as tonsil snaring and adenoid baiting is today? In-

deed the young lady whose ear lobes were unpunctured was as much a *rara avis* in those days as a bobless beauty is today.

**MID-VICTORIAN
ATTRACTION
ATROCITIES** And let us not forget that boring holes in young ladies' ears so that they might more serenely carry the half pound plummets or sinkers called ear-rings —was not the only attraction-atrocity performed in those demure days. Oh no! Consider the agonizing architecture of milady of those times.

Possibly the most prevalent pathology of the architecture of the late Victorian period to which we now refer, was a tendency to elephantiasis. Everything had to loom large. Walnut bureaus were built like battleships, cottages were proportioned like cathedrals, and cloaks and suits like tents or hangars.

Cosmetically, milady left her face as she found it—though the rashest might venture to sprinkle a little lavender water over her velveteen train. Costumically, however, she dressed in voluminous clothes and acres of textiles were spent on her garments. Many a dressmaking establishment to-day, carries less goods on the shelf than a lady of the nauseating nineties would carry on her self.

Self restraint is splendid but the self inflicted restraint of whale-bone harnesses, of silk lined strait jackets, of corsets that made wrists out of waists, of collars that only giraffes might wear in comfort, these were the penalties of attractiveness in those unhealthy days.

There comes Madam down High Street this very minute. Picture her—a veritable street cleaning department—yards of homespun trailing in the dust, gathering burnt matches, dead leaves and cigar stumps and all the wind swept debris of courts and alleys. She approaches a Colonial doorway—ample in its proportions and for very ample reasons. Before ascending the marble steps she manipulates a cord and pulley contraption whereby her hoop-skirt inclines a bit so as to permit freer exercise for her climbing ambitions.

Once in the capacious house she selects a capacious chair—and does she dig deep in a beaded handbag and out of its abysmal depths fetch a first aid outfit to powder her nose and lacquer her lips—Crime of crimes—No! Or does she unearth a shiny thing-a-ma-bob and find the spirit willing but the flash weak—and then borrow a match to inflame her Fatima? Sin of Sins—No! But the sins of priming a cigarette and primping one's person with paint and powder as now

practiced are not half as bad as the unhygienic sins committed then in the name of body cast and costume.

But enough for the while—sufficient to state that the false modesty and prudishness that largely dictated dependence on unhygienic and unhealthy pads and bustles and rats and collars and corsets has been displaced by a common sense dictation in the matter of woman's dress.

It is to the eternal credit of the weaker sex that it has through its own efforts emancipated itself from the silly chains and whalebones which had bound it secure for ages untold. Partly through a better regard for physical hygiene and an untrammelled functioning of natural processes—and partly through the agency of artifices of sensible dress and jewels and cosmetics—the attractive physical presence of the modern woman is a perfectly natural development.

The essence of woman is beauty—in all that the word implies—in all that it breathes—refinement, delicacy, elegance, grace, romance—and it is no crime to retain this essence—or to glorify it to the zenith of its possibilities. Only remember that I insist that it be done and not over done.

Richard Le Gallienne, whose very name suggests a gallant poet, charmingly paints with colorful words the vision I too can see, but am too clumsy of touch to portray. Here is the picture.

"Nature unadorned, lovely as she may be, seldom makes the most of herself, and her handmaiden art can teach her many things that do not necessarily artificialize her, but, on the contrary, develop and accent her naturalness. The lily of the field may not need painting, but the human lily is usually improved by sweet-smelling powder and a touch of rouge. As man's first duty to woman is his strength, so woman's first duty to man is her beauty. It remains, as of old, his inspiration and his reward. It is also her first duty to herself, for self-expression is the law of all healthy organisms. The meaning of woman is—beauty, and all that beauty implies, all that emanates from it: delicacy, elegance, romance, and the atmosphere that exhales from these attributes. The achievement of this need not detract from a woman's work-a-day qualities, her goodness, her helpfulness, or her intelligence. On the contrary, these qualities all gain by association with charm.

"It is curious to observe that the widespread renaissance of feminine æsthetics has come side by side with her vigorous entry into that hard work of the world which had previously been regarded as the

exclusive province of man. The old idea that the cultivation of a woman's brain meant a neglect of her beauty has been exploded, as the most cursory glance into a modern office, or even factory, is enough to prove. In entering man's world, woman, far from abandoning her own, has emphasized it, and whether she is a lawyer, doctor, or stenographer, she is very evidently more a woman than ever. I do not think it a masculine illusion, but it seems to me that the world can never have been so full of beautiful women, and the reason is that never before has woman, en masse, willed so whole-heartedly to be beautiful.

"For generations she has been a mere amateur of herself. Now she has become an artist—not to make of herself something that she is not, but to bring out what she is, to show herself in her completely expressed naturalness, as nature meant her to be, but sometimes failed in achieving. When Nature has not done her part, who shall blame a woman for striving to make up the deficiency? And by means of feminine aesthetics, a woman less endowed with natural beauty than some others can contrive to give an impression of beauty to 'the eye of the beholder' which is surely a gain all around."

Thus it is maintained today that there is no longer an excuse for physical ugliness except perhaps, that which is congenital or accidental. The sensible adornments of attire—the ease with which personal hygiene may have attention—and the limitless array of talent and tools dedicated to the care of external appearance—leaves no excuse for lack of outward grace and elegance.

DOING AND OVER-DOING Only the great danger comes as ever by over-indulgence and intemperance—and if there is any one phase of external decoration which is today overdone it is in the field over which I elected to speak this evening—namely with respect to cosmetics.

Nor is overdoing or overmaking up the only sin committed in the name of Cosmetics, for this field of personal adornment is one that lends itself very easily to the wiles of the quack and the crook. The percentages of Nature are so stable that we might call them physical constants, and that a "sucker is born every minute and a crook every hour" is a plan against which it is idle to protest. In other words, for every sixty of these gullibles it is in the order of things that a crook or a quack is born—and this proportion has prevailed it seems for many and many a day.

Kittens take two weeks to open their little eyes—but there are humans whose mental eyes seem closed long after their kindergarten days. And it is these human kittens who largely furnish the force and fashion the farce of the great cosmetic splurge. For they are the believing kind who hearken to the claims of every noisy quack—and who fall easy prey to the wiles of every occurring crook. They form the undiminishing multitude that still believes in the creative functions of hair tonics—in the face lifting, wrinkle erasing ability of creams—in one night bunion banishers, and in two-day chest or hip removers.



Testimonial of Mr. Joseph Goofus, Haddonfield, N. J.

THE COSMETIC SCOURGE

Open the advertising pages of some of the Beauty or Stage or Physical Culture magazines and behold the display of deftly baited tackle waiting for the poor fish to swim by. Then gaze with awe at the "befores" and "afters" on parade. There is exhibit A—a line picture of Mr. Joseph Goofus, of Haddonfield, N. G., twenty minutes before he sprinkled upon his simonized nap-less scalp a swig or so of someone's hair oil. And there he is, according to the artist, just about twenty minutes afterward. Look at his cranial upholstery now. Shades of the curl-clipping Delilah.

And here is exhibit B—and this *is* an exhibit. Both figures are or were, do or did represent a Mrs. Henrietta Bulkie, prior to and immediately thereafter—namely, the occasion of consuming in proper sequence five boxfuls of Dr. Fulsom's reducing Valves.

**WATCHFUL
WEIGHTING**

Party of the first part in bold face outline is Mrs. Henrietta Bulkie on her forty-fourth birthday. She weighed ten pounds when she was born—and every birthday seems to have brought ten more. Party of the second part marked in dotted lines is the same Mrs. Henrietta Bulkie two weeks after her forty-fourth birthday, reduced to the least common denominator—the interval in between having been occupied by said lady in the important business of eating five pounds of birthday candy and five boxes of Fulsom's Flesh Paring Pellets. Unlike the customary fairy tale however, this one does not indicate that Mrs. Henrietta Bulkie lived happily ever afterwards—that is, assuming that she ever lived at all.

Shylock, with his paltry pound of anthropic tissue was a piker compared to Dr. Fulsom who figures his flesh only on a quantity basis.

But it was not our intention at this point to tarry too long with the falsities and frauds of the cosmetic quack, for we meet with him later on in our talk, but so as to prove that "it was always thus," let me quote this formula given to an age old Celtic hair restorer:

"With mice fill an earthen pipkin, close the mouth with clay and let it be buried beneath the hearth-stone, but so as the fire's too great heat reach it not. So be it for one year, at the end of which take out whatever may be there. For baldness it is great. But it is urgent that whoever shall handle it have a glove on his hand, lest at his fingers ends the hair come sprouting forth."

**PAINTING THE
LILY**

To gild refined gold—to paint the lily, to sprinkle perfume on mignonette, have long been held to ridicule. The fact that Michael Angelo and Tintoretto and Gainsborough and Reynolds could for all their skill—never do justice to human countenance, the mirror of the soul, has been quoted to gainsay and question the possibility that the casual application of a daub of rouge or a cloud of powder might improve the human countenance.

To such an argument we venture the counter statement that many a great masterpiece of portraiture exists which is a vast im-

provement upon its model, and that much burnishing and fertilizing and sprinkling of perfume seems necessary upon occasion to redeem a tarnished gold—or to restore a languid lily—or to cover the tawdry tell-tale scent of a decaying mignonette. And if Webster missed it with his “definition” of cosmetics as “improving on beauty” I still feel that they have their place in “inciting to beauty” and in “beclouding the blemishes.” In this connection, the old colonel had the right idea, no doubt. Thus a brusque old colonel, newly married, whose wife had just returned from a beauty parlor, greeted her with this welcome: “For pity’s sake go and get all that stuff off your face.” When she returned, having obeyed, he shouted, “Good heavens, go and get it put on again.”

It is not an easy task ever to draw the line between the intolerance of purists and puritans and the intemperance of fools and pharisees. I quote this silly 1928 tirade against the use of cosmetics and other body adornments. It originates in Guthrie, Oklahoma—out there in the great open spaces where all men are reformers and women have fifteen minutes off on Sunday.

DRESS REFORM PLEDGE

If averse to signing this, see 2 Corinthians 13:5.

I promise to abstain from:

Short sleeves—Less than $\frac{3}{4}$ length

Short skirt—Above the shoe tops

Unnecessarily bright apparel

Attractive head attire

Dressing the hair and the use of Cosmetics.

Just as ridiculous however, when overdone, is the custom, which seemingly is on the increase, whereby young women—kalsomine, lacquer, enamel, veneer, bake, parboil, porcelain finish, shellac and electro-plate their faces with chemicals and corrosives fit only for barns, radiators and board fences.

The other day I saw a futuristic picture of Franklin Field after the ball game was over, and I said to the artist—“What are those fuzzy caterpillars streaming out of those red wren houses.” And he looked sympathetically at me and pronounced them as young men of means wrapped up in raccoon coats. But I had no need to ask him what the accompanying fusiform vermillion streams were, for

I recognized them at once as the mercurochromed obtruding lips of current Cleopatras.

**THE GOSPEL OF
"JUST ENOUGH"**

If only the "toomuchness" could be left out of our living, in many directions, how much longer and more lovely life would be. How much better it were could we all grow closer to the gospel of "just enough."

But on with our story—or shall I say with history—for the use or abuse of cosmetics is not by any means a recent disease.

Women of ancient Egypt over three or four thousand years ago employed all sorts of paints and cosmetics to improve their appearances and it is said that their beauty parlors were often as elaborate as the fashionable ones of today. Of course they catered only to the classes—for the masses still belonged to the great unwashed and unrefined.

The cosmetic ointments unearthed in Tut-ankh-amen's gaudy vault, the long lingering perfumes, the paints and pastes and powder used by these sweet sisters of the Nile, were not a great deal different from those dispensed today. There were finely powdered ochres to tint the lips and cheeks. The eyebrows and eyelids too received their stygian homage—for Kohl, a fine powder of resin soot or of sulphide of antimony was applied to the region of dark Egyptian eyes in order to enhance their goo-goo gaudiness.

**ALCOHOL—ONCE
A COSMETIC**

It is interesting to note here that our word alcohol finds its origin in this eye painting commodity—for it is the Arab Al-Kohl—or the finely divided matter—that gave us this prohibited word. Since that early day however, "Al-kohl" has increased its tinting territory. For today it might be considered fully as responsible for red noses as it is for blackened eyes, and as it was for blackened eyebrows and eyelids.

Henna, now used to hide the silver threads among the gold, was employed by Egyptian belles to stain their hands and finger nails, a practice said to have been indulged in by maids of Athens too, and to have given rise to that Greek metaphor—"Rosy fingered Aurora."

The heyday of cosmetics in Egypt was no doubt the period of Cleopatra's long reign—whose rare meeting with Antony on the banks of the Cydnus is immortalized by Plutarch and plagiarized by the sweet Bard of Avon. It was with lavish use of every available perfume and paint and artifice that this pearl-dissolving queen found

such an easy Mark in Antony, for contemporary writers tell us that she was much easier to look at when leaving her beauty parlors than when she naturally walked in.

**SEMITIC
COSMETICS**

That the children of Israel in captivity learned much of the esthetic tricks of Pharaoh's daughters, is indicated in their cosmetic indulgences when once they went into the business of government on their own account. Indeed the altar of incense erected on Holy Command by Moses, suggests an early Semitic allegiance to perfume and kindred cosmetics.

"Take unto thee sweet spices, stacte and onycha, and galbanum; these sweet spices with pure frankincense; of each shall be a like weight, and thou shalt make it a perfume, a confection after the art of the apothecary, tempered together pure and holy." So runs the command in Exodus.

It will not be sacrilege to aver that Moses must have had nearly as difficult a job converting this formula to perfume as he had changing the stick to a snake. For in the light of present interpretation the formula seems to adapt itself better to a fine spar varnish than to a heavenly scent.

Yet Moses thought so much of it that he restricted its use only to holy purposes—and in an amendment to his decimal decree indicates how incensed he would be were this sacred incense used for private purposes.

"Whosoever shall make like unto that, to smell thereto, shall even be cut off from his people."

Which suggests too that substitution and "something just as good" are not as modern as we thought they were.

The Babylonian and Assyrian women, too, were great exterior decorators. They, too, circumscribed their eyes with black of antimony (stibium) and not only tinted their eyelids and eyebrows but actually filled the corners of their eyes with this ethiopian coal dust.

As did Roman matrons in later days, they too enamelled their faces with white lead and scrubbed their teeth with ground up lava.

Perfumes of a sort, it is said, were generously indulged in by Babylonian beauties, for long before the reign of Colgate and Huddnut, necessity had taught them the redeeming obscuring offices of good substantial perfume. Those were the soapless days when perfumes were valued according to their covering qualities or strength and not according to their subtlety or mildness.

"If you don't use our soap, for heaven's sake use our perfume" is a modern aphorism but it is more of a truism than an aphorism insofar as the good old days were concerned.

Jezebel, whose name has rung down the centuries as synonymous with female perversity, painted her face and bobbed her hair just a few minutes before she fulfilled Elijah's prediction, and literally, went to the dogs.

In the halcyon days of Greece and Rome the cosmetic art achieved to very high eminences. Abundant records in prose and poetry remain to describe the Greek and Roman excesses in dress and style and paint and powder. Juvenal the Roman satirist refers to the boudoir of an emperor's mistress as an elaborate establishment where perfumes, and oils and spices garnered from every corner of empire served to adorn the Roman beauty.

"She hurries all her handmaids to their task
Her hair alone will twenty dressers task
Psecas, their chief, with neck and shoulders bare,
Trembling considers every sacred hair."

Generally the hair of Romans was a jet black, and blondes were naturally rare and as naturally envied. All sorts of tricks were employed to bleach the hair—one of the commonest being the "mattiac balls" of rancid goat fat and ashes of oak. Then, too, there was that very delicatessen bleach made of leeches steeped in vinegar until they smelled badly.

Ovid, that garrulous old maid of an author, refers to the iniquity and inanity of these unnatural hair bleaches in one of his metamorphic songs, in a very "I told you so" manner.

"Long since I warned you not to use that bleaching lye
Now there is left no single curl to dye."

Indeed the keen-cutting tongue of Martial, another old shrew of a Roman poet, alludes most sarcastically to the blond wigs affected by the envious brunettes of the Tiberian boulevards.

"The golden hair that Galla wears
Is hers—but who'd have thought it.
She swears it's hers—and true she swears
For I know where she bought it."

Now lest we be indicted for too much discursive femininity—let a Greek poet tell us in a lame translation that loses much of its

Athenian finesse, just how a young dandy of Athens dressed up. The first line of the verse, is fortunately, redeemed by the lines that follow:

"He seldom bathes
But in a gilded tub, and steeps his feet
And legs in rich Egyptian unguents.
His neck and chest he rubs with ripe palm oil
And both his arms with sweet extract of mint.
His eyebrows and his hair with marjoram,
His knees and face with essence of wild thyme."

(Antiphanes.)

To which we remark that the Greek dandy, according to our olfactory impressions must have presented an anatomic ensemble that smelled on the odometric scale—somewhere in between vegetable soup and soap liniment.

That there were puritans in Rome too, is evidenced by Martial's address to Polla, a famous Roman matron whose sixtieth birthday was spent according to Pliny in a "poultice of honey and wine lees with bulbs of narcissus ground fine," this in order to conceal the creeping crowsfeet of time's unerring scars.

Sings Martial quaintly and understandingly—

"Leave off thy paint, perfume and childish dress,
And Nature's aging honestly confess,
Two fold we see those faults which art would mend,
Plain, downright homeliness would less offend."

Juvenal too, dislikes these rejuvenating poultices and mud packs, for he states that the Roman husband rarely saw his wife's face at home, but only when she appeared in public. Referring to Poppaea, Nero's wife, who used to bathe in asses milk, and who when banished from Rome by her roaming Romeo of a spouse to make room for a more amiable amour, took with her a train of fifty of these cross but cosmetic animals—Juvenal sings:

"The crust removed her cheeks as smooth as silk
Are polished with a wash of asses milk,
And should she to the North be sent
A train of these attend her banishment."

Before leaving Rome let me quote a Roman formula for a face cream which seems to me not unlike recipes I have seen in my good wife's cook book for Buck's County griddle cakes.

"Take of Libyan barley husked and scoured two pounds, no less—and the same of powdered jack beans. Mix with them ten fresh hen's eggs. Dry in the sun for a day and a half. Then have them ground and add the sixth of a pound of calcined antlers. Gather of narcissus in early spring, before the bloom disrupts the bulb, take twelve such bulbs and pound them well in a mortar. To them add all of the powders above and then two ounces of gum of Araby, as much Tuscan seed and eighteen ounces of clover honey gathered at dusk, when the flavor is best. Beat them all to a very smooth fair paste. Yet smoother and fairer will be the face and hands of every woman who anoints herself with this."

**COSMETICS AND
THE FALL OF
ROME**

Just what cosmetics had to do with the decline and fall of the Roman Empire I hesitate to state, yet it is said that in these last luxurious days of the decomposing Empire their use reached such demoralizing proportions that the consuls, Lucinus Crassus and Caesar, published a law forbidding the use of all "exotics" or toilet accessories. Yet as in the case of Solon's edict delivered from the crest of the Acropolis in Athens, it was no better observed.

Odd indeed are the ideas and ideals of epochs and peoples as we judge them from our viewpoints.

Count Sonnini in his *Travels in Upper and Lower Egypt* states that there is no part of the world where the women pay a more rigid attention to cleanliness than in the Oriental countries. Nowhere in the world can the women assist nature in arresting the ravages of time as in the circles of Cathay. But listen to this Oriental recipe for eye paint.

"Remove the inside of a lemon, fill it up with plumbago and burnt copper, and place it on the fire until it becomes carbonized; then pound it in a mortar, adding coral, sandal wool, pearls and ambergris, and the wing of a bat, the whole having been previously burnt to a cinder and moistened while hot with rose-water."

There is a complexion powder called Batika, which is used in all harems for whitening the skin. It is made in the following manner: There are pounded together in a mortar some cowrie shells, borax, rice, white marble, tomato, lemons, eggs, and helbas. They are mixed with meal of beans, chick peas, and lentils and the whole placed inside a melon mixing with it its pulp and seeds. It is now exposed to the sun until dried and then it is reduced to a fine powder.

**HAIR DYES—
HAIR DIES**

A famous hair dye is composed of nut galls fried in palm oil and rolled in salt, to which is added cloves, burnt copper, minium, aromatic herbs, pomegranate flowers, gum arabic, litharge, and henna. The whole of these ingredients are pulverized and incorporated in the oil used for frying the nuts. This gives a jet black color.

The Orientals also use a perfumed almond paste, called hemsia, as a substitute for soap; a tooth powder called souek, made from the bark of a walnut tree and powdered bone; a depilatory called "termentina" composed of thickened turpentine, and similar to our depilatory waxes, and lastly a fine white cream of benzoin and jasmine pomade.

In China perfumes are not exceedingly popular. Musk—that long lasting animal odor—is their favorite perfume. Sandal wood, patchouly, soya and asafoetida complete the list. Neither is soap much used in China, in spite of its floating propensities, but the Chinese belles are not averse to cosmetics. At night they smear their faces with tea-oil and rice flour, and carefully remove it in the morning. Then they use a white powder, carmine on the cheeks, lips, nostrils, and tip of the tongue, and all topped off with a sprinkle of rice powder to bloom and soften the harshness of the colors.

BELLADONNA

So through the ages might one find volumes upon volumes of quaint cosmetic lore—but we must hurry on. However, there are one or two points of especial interest to note in passing by.

For instance there is the famous herb of Atropa—first cousin to spud and tomato, whose very name breathes romance and beauty. For belladonna, whence eye drops come, gets its name Bella donna or "sweet lady" from the fact that Italian belles enlarged the pupils of their pretty eyes with this all-powerful herb.

And there is court plaster, so named because ladies of King Charles' court esteemed it very fashionable to plaster their faces with trim patches of this sticky black fabric. Evelyn, the second best diarist, remarks quite naively that "painting and similar tricks of the toilet did not become established among *respectable* women before the spring of 1654."

Sinisterly enough this was just four years after a bill had been introduced into the House of Commons by the Puritan party for the

suppression of "the vice of painting, wearing black patches and the immodest dress of women."

We might have tarried, were it not for press of time, a little in Venice and Florence, where prosperity as ever revived the cosmetic arts and out of whose history came such romantic names as Santa Maria Novella, the monastery where the first cosmetic laboratory opened its doors with monks as skilled perfumers.

And there is Frangipanni, who accompanied Columbus on his trip to see America first, whose famous perfume yet carries his name to this day. Diana of Poitiers, Cagliostro, Richelieu, Madame du Barry and Pompadour, Marie Antoinette and Madame Tallion's bath of crushed strawberries. Good Queen Bess, whose still-room was only cosmetically inclined, Isabella of Spain and Chypre—Napoleon's pet smells and his quarterly perfume bills of a thousand francs. All these historic names might keep us busy with their romance and make us forget that we have yet to talk of the present—whose cosmetic contraptions are so commonized that not kings and queens and cardinals alone have access to their wiles, but all who wish to use and abuse them.

**LO—THE PURE
INDIAN**

And here we are at last away from other times and other climes, and back to our own domain and day. And certainly with no nation had the cosmetic urge a better start than with us of North America. For long before the lichens and weeds around the Plymouth rock were disturbed by the hob-nailed shoes of Christian vagabonds, a race roamed our land whose decorative instincts were most intimate and personal. For Lo the Poor Indian was rich in vanity long before the paleface came.

No damsel or dowager of old ever spent more time with her toilet than a Sioux or Crow getting ready for a trip to his sweet-heart's tent, or to the hunt for man or beast. One is not surprised, then, that with such a fine start in the business of feathers and flooey and finery, the cosmetic urge should have found this continent such an easy place to progress.

But times change, and there is an evolution to every living thought and thing. Through all the ages up to the present we have followed the trail of the cosmetic urge—and have noted its sporadic, spasmodic yet constant development. From the lotus perfumed, ochre tinted lip salve of Antony's beloved to the phosphorescent mercuro-chromed, kiss proof lipstick of the current Cleopatra, is a long, long

way. In between times, of course, there were those drab days when milady was pleased to leave her face and her figure as she found them—but always these were only temporary setbacks.

And never was a time when the urge was as all-consuming, all-embracing and powerful as it is today. Picture the modern flapper—be it shop girl or lawyer, aviatrix or mill-doll, doctor or nurse, dowager or damsel, mother of ten or school girl of ten. There she is with a minimum of clothing in between the head and the heels, and avid for cosmetic attention.

**CURRENT
COSMETICS**

Above the neck the upkeep is especially high. For with the bob, the marcel, the shingle, the permanent, the neck shave and ear trim, the cost of the hair keep is in inverse proportion to its scarcity. And what with paint and lipstick, mascara and eyebrow enamel, the face value comes high.

Below the knees, depilatories and veils for varicose veins—corn solvents and bunion and blemish banishers—and not to forget the sinuous stockings of scroopy silk and slippers of satin and snake-skin. No such young or old lady today minds little things like quinsy, pleurisy, pneumonia, sinusitis, coryza, or even early death so long as her outfit is *ritz* and attractive.

And here at last is the truth about how the fair sex gets that way: More than half of all American women—55 out of 100, to be exact—use rouge.

Seventy-one in 100 use perfume.

Approximately 90 in 100 use face powder.

Seventy-three in 100 use toilet water.

But only 15 in 100 go in for lipstick.

These are the figures reached by a survey conducted by the *Milwaukee Sentinel*.

But for all that, the average woman pays only \$50 a year for her perfume, paint, powder and primping which is a little less altogether than the \$60 which the average smoker passes over the tobacco counter annually.

Of course if she wishes to go in for exclusive effects in exterior decoration she can spend as much as \$27.50 an ounce for the most expensive perfume and proportionately as much for other toilet aids. But on the other hand she can get perfume for 50 cents an ounce—and the average price is but \$1.86.

**WHAT PRICE
BEAUTY?**

However, cosmetics and their allied aids to beauty make one of the greatest factors in the business of the modern drug and department stores. The greatest toilet goods center in the world, located in a New York department store, employs forty-nine clerks, occupies an area of 15,000



square feet of floor space, and sells \$3,000,000 worth of beauty accessories annually!

The fascinating flapper, demure young matron or desperate dowager who really takes her beauty artifices seriously can spend an afternoon trying to decide what powder to buy in this half-acre of

cosmetics. Counting shades, scents, sizes, brands and shapes there are no fewer than 1300 kinds.

And powder is only an item. There are more than 1200 kinds of perfume. Cold creams number 600, and rouges, ranging from carmine to near-yellow, make up an assortment of 347 items.

During a lecture on cosmetics it will not be amiss to discuss figures—statistically as it were—and so here are some data compiled by the Bureau of the Census, Department of Commerce, to indicate the immense output of perfumes, cosmetics and toilet preparations in the United States during 1927. That their manufacture is on the increase is clear by comparison with the preceding year, when the output was smaller by twelve per cent. Here they are:

Dentifrices	\$30,624,000
Creams	29,978,000
Rouges	11,394,000
Face powders	20,531,000
Talcum powders	8,033,000
Other toilet powders	3,148,000
Perfumes	15,275,000
Toilet waters	8,441,000
Hair tonics	11,438,000
Hair dyes	3,124,000
Shampoos	3,819,000
Depilatories	1,071,000
Other toilet preparations	30,215,000
<hr/>	
Total	\$177,091,000

Three thousand miles of lipstick, enough to reach from New York to Reno, are used each year by the women of America between the years of 15 and 75, according to a recent bulletin issued by an advertising agency. They based the estimate conservatively on two lipsticks per annum per person.

Also our fair sex uses approximately 375,000,000 boxes of face-powder which allows slightly over a pound to each individual, and some 240,000,000 rouge compacts, not including the liquid and paste rouges.

These statistics show that the average woman spends \$50 a year on cosmetics and beauty culture, striking a medium between the practically extinct "just soap and water" advocates, and the constantly

increasing number who make a practice of regular professional beauty treatments.

Of this \$50, one-sixth is spent for face powder and rouge; one-sixth for creams; one-sixth for perfumes, toilet water, talc and other toilet powders; one-sixth for dentifrices; one-sixth for hair tonics, shampoos, and—sh-h—hair dyes; and the remaining sixth for miscellaneous preparations and for treatments.

Two billion dollars is the amount of money spent annually for cosmetics and beauty treatments, by American women, according to another authority.

Research on the theatrical stage and in society in New York intimates that the bulk of that almost \$2,000,000,000 of beauty buying is done by women who were born to bloom unsung and unnoticed by the world—a vast section of the feminine population whose moods and skins need to be softened by the gentle manipulation of expert fingers weighted with fragrant creams, and whose talent for chatty conversation finds an outlet and an audience in thick and tepid air that smells of soap and singed and drying hair.

France, the great civilizer of Europe, never had such hectic cosmetic days. In the light of these stupendous figures how insignificant seems the fact that Madame de Pompadour's household at Choisy managed to spend 500,000 livres (about \$100,000) for perfume alone.

And as decadent Rome, effeminate and effulgent from over cosmeticizing, and over-perfuming, fell before the malodorous masculinity of barbarian hordes—so too did the empire of du Barry and Pompadour, Versailles and the lady-like Louises—crumble before the unlovely and perfumeless though not odorless rabble that maneuvered the French revolution.

Not indeed that we would draw morals and inferences from these recitals as we consider our own nation's cosmetic indulgence, for between our days and the days of Rome are no comparable conditions. Only the rich in Rome—and the favored few of the Court of France—could afford these inordinate luxuries. The perfumed eras of the Empire of the Fleur de Lys meant the plunging of the peasantry in interminable debt from constant and extortionate taxation. The balmy sweet-scented baths of Rome robbed the governing race of the vitality and virility wherewith that valiant city had extended its ramparts to every corner of earth.

**A COSMETIC
DEMOCRACY**

But not so with America—for our cosmetic frailties are diluted by spreading over so much territory, and so they incur no envy and accomplish, if sensibly handled, but little basic damage. With us even our vanities are those of a democracy, and rich and poor alike share commensurably in the pastimes and pleasures of this luxurious age.

And so we end the history—but not the mystery of the cosmetic kingdom. During the brief time left us we propose to glance at the array of cosmetic commodities in common use today, and comment carefully and perhaps abruptly on certain of their characteristics.

ROUGE

Let us start with the *paints*. *Rouge*—formerly made from ferric oxide, used by jewellers as a polishing paste—and present in putz pomade—is now made from carmine, carmoisine and various coal tar colors, mixed with talcum, starch or fullers earth and always properly perfumed. It is worthy of note in passing by that certain persons exhibit great intolerance to rouge containing carmine or alloxan, and should be diverted to using some of the harmless coal tar color rouges. The compact rouges contain a little gum arabic to afford the necessary adherence. Liquid rouges generally are made with glycerin and alcohol as the base.

EYE PAINTS

Eyebrow pencils and eyelash cosmetics are still made as they were in Egypt five thousand years ago—namely from soot, lampblack, burnt sienna and soap or wax and paraffin. One that came to our notice recently was a lacquer, to be applied with brush, and it was not at all unlike the compound used to finish automobiles—except that it cost as much per quarter pint as the two-tone lacquer costs per gallon.

**LIP STICKS
AND SALVES**

These are usually a paraffin base, with wax or cacao butter reinforcement. They are generally colored with carmine, though the newest are tinted with colors from coal tar—mercurochrome the recent colorful antiseptic being extremely popular because of its adhesiveness and high tinctorial value. It might be well to note too that mercurochrome contributes a sanitary quality to the very unhygienic though romantic habit of osculation.

The ideal lip rouge will rub on smoothly and evenly and will neither come off with the soup nor be erased by osculation, hence the kissproof and soupproof lipsticks. The amenities of our modern civilization demand that rouged lips know no curfew bell, and an "evening rouge" is therefore available. This is usually prepared with a fluorescent dye such as eosin—a dye which by a strange coincidence finds much use in the hospital laboratory for staining pathological tissue.

Lip salves to prevent undue cracking and fissuring of lips generally have glycerinated gelatin for a base, with a mild antiseptic and soothing agent such as boric acid and menthol present. Greaseless lipsticks are readily made by tinting strong borate of glycerin with scarlet eosine. These have the advantage of being colorful, antiseptic, medicinal and serviceable day and night.

MANICURE PREPARATIONS These comprise such softening creams as are used for the preliminary treatments, cuticle removers, bleaches, polishes and varnishes. The preliminaries are best done with water, flavored or from the Schuylkill, in which is dissolved a little borax and washing soda. The cuticle removers are mild solutions of caustic alkali (generally 2 per cent.) in glycerin and water.

The bleaches are usually made of tartaric or oxalic acid, or strong peroxide, all of which if over-indulged in may have a tendency to embrittle the keratin of the nail. Nail polishes are made from tin oxide or with various abrasive earths, perfumes and colors. The liquid polishes contain these materials suspended in glycerin, gum and water. Nail enamels are generally made of soluble gun cotton, and the proper solvents and plasticizers.

FACE CREAMS These greasy or greaseless so-called skin foods are so diversified in their character that it will not be possible to discuss all the types in common use.

Their use in preserving the mellowness of the skin dates back to earliest antiquity, although the type of skin cream, exemplified by our mineral oil cold cream was never known to the ancients. Rather it was the vegetable or animal oil unguents or creams, rendered pleasing in odor by the addition of balsams and resins, which found so large a field of usefulness with the ancients.

And here we venture the opinion that the mineral oil cold cream, which constitutes the greatest group of greasy face creams now sold and dispensed, is not particularly beneficial to skin surface.

Far better are the cold creams made from the saponifiable vegetable or animal oils.

While the art of the ancients was in knowing how and not why—they often excelled us in the business of displaying good horse sense. It is well known in the laboratory that dangerous and malignant skin growths and tumors can be produced in the animal by constant exposure to crude mineral oil. This fact alone should be sufficient to warrant the claim that almond oil cold cream is far superior to any mineral oil cream, no matter how deftly aromaticized.

It is interesting to note here that cold cream as such owes its invention to Galen the famous Greek physician, who practiced in Rome during the second century.

The vanishing cream—whose name suggests its use as a reducing cream, though it has no such properties, is a soap base—generally made from stearic acid and washing soda. As a worthwhile cosmetic its reputation is doubtful and it too, won its favor through its flavor and good advertising.

Cucumber creams, almond creams, massage creams made of sour milk, lanolin creams, cacao butter creams, etc., all have their reputed purpose, but it is doubtful that any of them possess any advantage not possessed by a good vegetable oil cold cream.

Do face creams grow hair is a question often asked. If they radically did so, they would long ago have been used for hair tonics. Yet it is consistently urged that too frequent an application of the greasy creams, particularly the animal type, do promote the unwanted growth of hair.

**FRECKLE
CREAMS**

Freckle creams usually contain a chemical such as white precipitate, a mercury compound, and are not always safe to use. Much more to the point with respect to curing freckles is the following instruction given in one of the comic magazines.

“Remove the freckles carefully with a pocket knife, soak them overnight in salt water; then hang up for two months in the smoke house with the rest of the hams. Freckles thus treated never fail to be thoroughly cured.”

HAIR DRESSINGS

Shampoos we dismiss without much discussion, pointing out in passing that a good soap will do as well as any elaborately perfumed shampoo available, providing enough patience and elbow grease be administered in its application. Advertising agencies, of course, are not apt to agree with this statement.

Hair tonics have always been a matter of joke column discussion. Care of the hair is a procedure which can be scientifically and successfully conducted with very simple measures, and this is no time to discuss such measures—but it can be unqualifiedly announced that the spasmodic application of so-called hair invigorators and tonics may be expected to grow hair on a bald spot with as much certainty as sprinkling a bit of it on a Brussels rug may be expected there to develop a Chenile nap.

Hair tonics are available in very convenient sprinkling or massaging containers, and they contain almost every drug on the Pharmacopoeia. Bugs, roots, poisons such as carbolic acid and bichloride of mercury, leaves, heavy chemicals, dyes and all sorts of queer substances in alcoholic solution, are used in their manufacture.

Since dandruff, a parasitic disease, is usually associated with falling or decaying hair, hair tonics are frequently expected to do a double duty, namely cure the dandruff and grow hair as well. From the poisonous composition they frequently have they might be expected to be valuable not only in the treatment of the stationary dandruff, but also to cure that variety of dandruff known colloquially as jumping dandruff, or more scientifically as pediculosis.

Hair bleaches are most commonly of peroxide composition, and when generously used not only bleach the hair but rob it of its vitality as well. Hair never has been bleached white except through the agency of disease, old age, or trauma. Always when chemically bleached by oxidation or by reduction, the residual color is a yellow dog yellow—something of a cross bewteen the color of a November pumpkin and a burlap bag.

Hair dyes again, are a complicated group of preparations. Most of them are of dangerous composition, particularly the group containing coal tar compounds such as the paraphenylenediamin group. Their indiscriminate use can produce not only local irritations but constitutional diseases as well, and death has been known to ensue from their over-use or through idiosyncrasy.

One kind of hair dye, the silver type, actually silver plates the hair fiber, only that the silver is in such a form that instead of being lustrous and metallic it occurs as a microscopic black coating. Lead compounds too, are used for dyeing as well as for alleged tonic purposes.

The safest of the hair dyes are the vegetable colors mordanted on with such compounds as alum, etc. Henna, walnut, etc., are such compounds.

I have purposely omitted mentioning the marcelle or kindred hair treatments. These are physical heat processes which are unnatural to the hair and consequently if too frequently or too severely administered are bound to do damage.

DEPILATORIES The amenities of convention require the removal of hair from body surfaces, and it is a much easier chemical proposition to remove superfluous hair than to coax its growth. Certain chemicals such as sulphides, arsenates, etc., do this job about as well on the living human as they do on the carcases of animals whose skin is desired for the tanning industries.

Generally all the depilatories are of the same base, only the perfume being different. The cheaper types, not so well perfumed, leave behind an odor suggesting a recently butchered fowl, whereas for three dollars more one can be secured whose trail is much more cleverly protected by captivating perfume. A Gillette razor of course, makes a splendid temporary depilatory. Nor must we forget the epilating waxes which work on the principle of a porous plaster, pulling out the hair by the roots. Then, too, there is the electric needle, a somewhat painful and tedious, though very thorough depilatory.

MUD PACKS These face masks have a real value when properly applied, although their results are purely temporary. Glycerin and clay, such as fuller's earth, and the perfume, of course, constitute most of them. Their value lies in the fact that while drying on the face, they promote active surface circulation of blood and when removed they bring with them much of the dirt enclosed in the superficial skin pores.

**ANTI-PERSPIRA-
TION PREPARA-
TIONS**

These products usually contain a small amount of chemicals which locally stop the secretion of the sweat glands and neutralize or mask the offensive rancid odors so frequently associated with such secretions.

Such chemicals are alum, salicylic acid and compounds thereof. The indiscriminate use of these preparations is to be avoided.

**REDUCING
CREAMS AND
PREPARATIONS**

Possibly more sins have been committed by quacks and crooks in this field of cosmetics than in any other. The surgical end of it we shall leave to the plastic and cosmetic operator. The improvements in that stiletto profession have been so striking that terrace fronts may now be surgically removed without much risk to the tenant. Depending upon her ability to pay the necessary fees a woman disporting three or four chins may have one, two or three of them removed with little risk, and so return herself to monochinic complacency.

But this is not the place to discuss cosmetic surgery.

Rather it was our purpose to laugh publicly at the several tricks of the quack manufacturer—maker of bootleg cosmetics, who knowing the craze for sylph-like figures, has with his tricks misled many a stout sister to shed more coin of the realm than avoirdupois.

According to a recent report of Dr. Frederick Kebler, chief of the Division of Drugs, United States Department of Agriculture, these cosmetic sharks are reaping profits aggregating millions as a result of this craze for angularity in place of curves.

Co-operating with the Federal Postoffice in its effort to prevent use of the mails to defraud, Dr. Kebler has recently directed the investigation and analysis of more than forty so-called obesity cures, not one of which, he states, could be recommended as being both effective and non-injurious.

The remedies tested range from bath salts, chewing gum, pills and patent teas, to reducing creams and soaps. All of those examined, in the class involving internal use, have been found to contain a few cents worth of cheap phenolphthalein laxatives and simple household products such as epsom or rochelle salts, which could not conceivably aid a person intent upon losing weight. Many of the pills contain thyroid extract, which should never be administered



Rough Diagram Suggesting: Left
—the long-wave Infra-Red rays;
right—short-wave Ultra-Violet.

'RAY-'RAY
Get thin-growlight
with
light!



watchful
Weighting!

Feed Fat Away

It seems queer, but the modern method is to feed away excess fat. The food is a gland substance, taken from cattle and sheep. The amount decided by scientific tests is two grains a day.

The reason is this: Medical research has found that the great cause of excess fat lies in a weakened gland. It is really a disease. No exercise or diet can correct it.



Fat Fades Away!

S	M	T	W	T	F	S
				3	4	
5	6	7	8	9	10	11
12	13	14	15	16	17	

Will you
give me 10 days
TO PROVE I CAN
MAKE YOU
SLENDER?

Ad nauseam
compiled without permission
from current magazines.

except by a physician. Some of them contained iodine bearing drugs such as seaweed.

One sample of bath salts turned out to be common photographic "hypo," used probably because it has *reducing* effects in photography. On the same basis I recommend hydro-quinine as a splendid developer. Weak kneed, hollow-chested creatures take note. The creams usually have been found to be a soap containing some fancy perfume.

Heavy fines have been levied against manufacturers, convicted of fraud, and dozens of the remedies have been put off the market, but new ones keep cropping up to take their place. Dr. Kebler says profits on such products range from one to four hundred per cent., and it is not unusual for the annual net income of the promoter to reach six figures, sometimes hitting the half-million mark.

WATER AND OBESITY Since the body contains much more than one-half

water, and since water is the most volatile product in the *sober* body, it might be safely generalized that the usual path of body reduction is through water loss, a real desiccation or dehydration. That indeed, is how hot baths and sweat-producing devices function as body weight reducers. That too is the reason why all of these fraud preparations insist on very hot baths with every application of their product.

DRIED APPLES AND PRUNES On the same principle are apples and apricots dried and I have seen silly women who have carried reducing principles to extremes look just about as

attractive in appearance as a dried apple or an arid apricot.

Typical of the bare-faced advertising that seeks to capitalize the craze of the rotund for contracting their outlines, is the following piece of ridiculous rot. (And this is from the columns of a *respectable* Philadelphia newspaper.) And, of course, the gist of the copy is in this reference to the unerring accuracy of the marvellous shrinking device.

"Lose weight where you most want to."

What a high sense of anatomic geography this simple medicine has!

NOW YOU CAN REDUCE 2 TO 4 LBS. IN A NIGHT

Eat what you please

Wear What you please

Do what you please

Take no risky medicine

Thousands of smart women have found this easy way to take off 2 to 4 pounds once or twice a week. These women take refreshing Bunko baths in the privacy of their own homes. Bunko is the concentrate of the same natural mineral salts that make effective the waters of twenty-two hot springs of America, England and Continental Europe. For years the spas and hot springs bathing resorts have been the retreat of fair women and well groomed men.

Excess weight has been removed, skins have been made more lovely, bodies more shapely and minds brighter.

LOSE WEIGHT WHERE YOU MOST WANT TO

Bunko reduces weight generally, but you can also concentrate its effect on abdomen, hips, legs, ankles, chin or any part of the body you may wish.

Results are Immediate

Weigh yourself before and after your Bunko bath. You will find you have lost from 2 to 4 pounds. And a few nights later when you again add Bunko to your bath, you will once more reduce your weight. Soon you will be the correct weight for your height. No need to deny yourself food you really want. No need for violent exercise. No need for drugs or medicines. Merely a refreshing Bunko bath in the privacy of your own home.

The thyroid gland is sometimes deficient in its heat producing qualities and so the body hangs on to its accumulated fat and protein. The properly controlled administration of dried thyroid may assist the body to so change the structure of the protein so that its jello-like quality of water retention be lost or minimized. But thyroid is dangerous medicine and should never be permitted in patent medicines—patent and potent too.

If it is in the "nature of the beast" to be fat—a sensible regulation of the diet, the cause and effect of over-avoardupois—is the only rational prophylactic.

**FACE POWDERS
AND ENAMELS**

It is obvious that air, light and changes of temperature are intended by Nature to reach the skin. Modern convention ordains that very little of the skin's surface is left exposed for Nature's agencies. Clothes, more or less, cover the entire body and today's fashions seemingly demand that powder or paint or paste shall cover the rest.

I have elsewhere rendered my opinion that this denial of light and air is highly unhealthy to the body. The surface of the body is meant to absorb light and to extract some of its qualities, imparting them to the surface circulation and thence through the blood into the intimate corners of the body.

Modern devices hinder this—the smoke of our cities, the light dispelling qualities of ordinary glass—our overwhelming clothes, and cosmetics. And with the chemicalization of our foods—and a consequent loss of locked up sunlight in vitamins, this modern denial of light and its values may be a prominent factor in the spread of that horrible disease of our present civilization—namely, cancer.

But since these important considerations in public performance are secondary to decoration, let it be stated here that if cosmetics of the covering kind are to be used at all, they should be used only as the occasion demands it, and well washed off when the occasion ends. It is important too that only such powders are used as are comparatively harmless in their ingredients.

Face powders, once loaded with bismuth and lead salts, are now fairly uniformly free of poisonous products. That such is still the case in foreign countries is attested to by the following clipping.

**LEAD POISONING OF JAPANESE INFANTS BY
FACE POWDER USED BY MOTHERS**

A disease peculiar to Japanese children at the age of dentition is attributed by the author to lead poisoning due to the white face powder which is habitually used by Japanese mothers. It is stated that this disease is one of the chief causes of infant mortality in Japan, and has been prevalent for the last 200 years. The usual age of onset is eight months, and the disease is more prevalent in hot weather, due to increased use of the face powder by the mother. Fatal results are frequent, and lead is found in the body post-mortem. The source is always traceable to the face powder used by the mother.

Talcum, or powdered soap stone, the several starches insoluble magnesium and zinc soaps and salts, chalk, etc., are the bases now generally used. Perfect adherence to the skin, fineness of texture and admixture, color and the inevitable perfume, are the necessary qualifications of a good face powder.

Rice powder (*Poudre de riz*) is a face powder which sometimes contains rice starch, but more generally the less expensive Nebraskan corn starch. In an emergency the housewife might prepare a dessert from this cosmetic, providing the flavor suits.

Compact powders are essentially the same as above, compressed by machine into the customary shapes.

Note that all other qualities being equal, cosmetics are expensive or cheap, according to the attractiveness or crudeness of the label, and container, or the elegance or crassness of the perfume used.

The enamels or liquid face powders are chiefly glycerin, gum and water suspensions of the very finest kind of face powders—in other words a sort of a highly refined white wash or dry color alabastine.

The colors in face powders and rouges and enamels are as variable as the color of sunsets. This is only a partial list: Cream or Rachel, Brunette, Naturelle, Pink, Rose, Mauresque (sunburn shade), Ochre, Orange (for anemic ladies with auburn hair), Blue for shading the eyes Mauve and many other shades. There is quite an art in producing just the right tones and shades and an equally insistent art in the business of selecting the right one to suit the face, the weather, the occasion and perhaps the pocketbook.

One of the extremely exotic, esthetic, esoteric—and perhaps asinian French beauty "doctors," has prepared a chart of face powder modes and moods—the mode fitting the mood and the mood benefiting by the mode.

That the fad of face kalsomining is being objected to by economically inclined beaux is testified to by this bit of "poetry" borrowed from "Life":

"In the gloaming, Oh my darling,
When the lights are dim and low,
That your face is powder-painted
How am I sweet heart to know.
Twice this month I've had to bundle
Every coat that I possess,
To the cleaners—won't you darling
Love me more and powder less."

SOAPs

"The skin you love to touch"—according to one famous soap advertisement, got along for many a century without soap and sometimes I wonder whether a little less soap and a bit more weight and water might not produce a far healthier cleanliness.

The story of soap has already been written by Professor Cook in a former popular lecture, and I dismiss the subject with the statement that soap is soap whether perfumed or colored or medicated, or whether just a plain garden variety of soap. In other words

"A soap by any other name,
Washes quite as clean."

The presence of free alkali in soap is to be interdicted, but ordinary soap releases free alkali as soon as it hits water anyway.

And so, with a feeling that we have dealt only very superficially with our subject, we must bring our story to its close. Too long we remained with its historical phase—and not long enough perhaps with its equally interesting hysterical and compositional phase. But we may later return to that part of the story and treat it more liberally and completely.

"Sanity" and "sanitation" are derived from the same root word. "Mens sana in corpore sano" is a well established proverb. And the sanitary aspects of cosmetics too are largely governed by sane viewpoints. I terminate my already lengthy remarks by repeating that, with this human—very human tendency to decorate and adorn—is no sin where moderation and sound sense prevail.

And the words of a very commonplace verse seem to fit quite adequately into this closing paragraph.

"Reformers all say, each in his own way,
That this thing or that will hurt you.
But remember my lad
With good and with bad,
Too much of a thing is ever the sin
And exactly enough is the virtue."

SOME RECENT RESEARCH ACHIEVEMENTS IN PHARMACY*

By John C. Krantz, Ph. D., Baltimore, Md.
Director of Pharmaceutical Research, Sharpe & Dohme

IT IS INDEED a privilege to be called upon to address a group of pharmaceutical educators and board members as is assembled here in this Atlantic City Meeting. Although I am no longer actively identified with the teaching of pharmacy in any school of pharmacy, my former experience in this work has created a bond of affection which is responsible for my deep interest and sympathy in the progress which the faculties and boards are making to the end that through their efforts the profession of pharmacy might be advanced.

Much has been said regarding the scope of our profession of pharmacy, to me its boundaries are illimitable. Not only does pharmacy deal with the compounding of physicians' prescriptions to which it is so often confined, but any procedure in which drugs are manufactured, tested, or investigated in my mind properly belongs within the scope of this field. It is with delight that I speak upon the research achievements of pharmacy for the fact that research is being carried on in Pharmacy brands this profession as dynamic, rather than static, and things which are static are destined to die. The new research achievements of pharmacy today will be the pharmacy which is practiced tomorrow. Pharmacy moves forward by that same rhapsodical, yet forward trend of progress by which all science pushes forward, namely, the discovery of the new. As Sir Ronald Ross said, "Discovery is thus the increment of progress; it is the differential coefficient of the curve of knowledge." The first type of advances in pharmacy which I would like to have you consider with me are those researches which have been primarily concerned with the stabilization of pharmaceutical products.

Stabilization of Pharmaceuticals

Professor Scoville has very ably said that the greatest advance which took place during the last quarter of a century in the practice of pharmacy was the standardization of medicines, and undoubtedly

*Read before the Tristate Conference of State Board Members and Pharmaceutical Educators at Atlantic City, N. J., March, 1929.

the trend of advance in the next quarter of a century in pharmacy will be toward the stabilization of medicines. Toward the accomplishment of this end, Professor Scoville stands as one of American pharmacy's outstanding workers. Scoville has studied very carefully the factors which cause precipitation in fluidextracts. Through a series of comprehensive investigations which embodied practically all of the well known fluidextracts, this worker drew the conclusion that light was not a serious factor, likewise the phenomena of oxidation or reduction were not of paramount importance in the precipitation occurring in fluidextracts. Professor Scoville's conclusion was that the leading factor responsible for the precipitation of fluidextracts was that of hydrolysis, and in many instances he suggested how this difficulty might be obviated; first, by increasing the alcoholic content of the fluidextract, and second, by bringing about a change in the acidity of the preparation often times necessitating the addition of small quantities of acid to the fluidextract.

Along with these same lines of investigation, Swanson and Hargreeves have carried out a series of researches studying the influence of changes in hydrogen-ion concentration in fluidextracts of *nux vomica*, *gelsemium*, and *veratrum*. The conclusion from their experiments was that fluidextract of *nux vomica* and fluidextract of *gelsemium* required no definite hydrogen-ion concentration to produce stability whereas fluidextract of *veratrum* seems to require a very definite hydrogen-ion concentration to control its deterioration. These workers plan to study further the fluidextract of *veratrum* in order to determine the exact point in hydrogen-ion concentration at which the preparation reaches its optimum stability. These same investigators have very definitely shown, upon another occasion, that tincture and fluidextract of *aconite* are made more stable by adding quantities of acid to preparations sufficient to produce a hydrogen-ion concentration between pH 2.5 and 3. This was accomplished by adding hydrochloric acid to the menstruum.

We are all interested in the stabilization of tincture of *digitalis*. Macht and others have very definitely shown that light, particularly ultra-violet light, causes the rapid deterioration of this tincture. Although there is some question about the magnitude of its action, there seems to be definite evidence that polarized light causes the deterioration of tincture of *digitalis* more readily than does ordinary light. Tincture of *digitalis* has been made more stable by the addition of small quantities of tartaric acid which seems to indicate again that

the stabilization of tincture of digitalis is very closely related to its hydrogen-ion concentration. Although an American investigator, Tainter, a few years ago arrived at the conclusion that acids would not influence the stability of infusion of digitalis, Takahashi, writing in the Tohoku Journal of Experimental Medicine claimed that from 0.05 to 0.1 per cent of hydrochloric acid increased the stability of the infusion of digitalis, and furthermore, reduced its local irritant action. There seems to be every reason to believe that we are on the road to the production of a stable tincture of digitalis.

K. K. Chen, that astute investigator of the Orient, has again thrown light upon his favorite drug, ephedrine sulphate and hydrochloride, when he calls attention to the fact that these alkaloidal salt solutions are perfectly stable over a period of one and one-half to two years at least.

Ditzel and Huss writing in the Archives of Pharmacy have carried out a very comprehensive investigation regarding the stability of morphine under the influence of sterilization in aqueous solution. These investigators have found that the presence of alkali seems to increase the rapidity with which morphine, through oxidation, passes over into the pseudomorphine; or in other words, here again we find that hydrogen-ion concentration is a very definite factor in maintaining the stability of morphine solutions under the influence of sterilization.

Along this same line, Pittenger and another investigator have shown that solution of homatropine hydrobromide either plain or when made isotonic with the tear, are perfectly stable for a period of at least a year and a half after sterilization.

Slama and another investigator have shown that the stabilization of eserine sulphate and salicylate solution can be accomplished by adjusting the hydrogen-ion concentration to a pH between 2 and 3, and have substantiated the previous known fact that carbonated water and preferably an atmosphere of carbon dioxide within the flask seem to be the best practical means of stabilizing the solutions.

The work of Ralph B. Smith in the study of colloidal silver preparations, and their stability is of very special interest, especially to the hospital and the retail pharmacist. Smith has shown that solutions of mild and strong silver protein change very slightly in silver-ion concentration during the first four months, and the change is so slight that it is believed that it would not alter their germicidal power. Further, this investigator believes that if any of the solu-

tions on aging produce irritation, the irritation is due to some cause other than a change in silver-ion concentration.

Samuel Shkolnik of the University of Illinois, School of Pharmacy, investigated the liniments of the Pharmacopoeia, namely, soap liniment, chloroform liniment, and camphor liniment and concluded that all of these were stable in ordinary conditions of storage, and that the instability under the different forms of storage is practically negligible.

Of special interest regarding the stabilization of ointments and the prevention of rancidity in fats, is the work of Professor Husa of the University of Florida. Husa has found that hydroquinone reduces the development of rancidity in oil of sweet almonds, and further that the addition of 0.5 per cent. of this compound to lard reduces the rate of development of rancidity to about 50 per cent.

Recent Developments in the Products From the Ductless Glands

In the investigation of the properties of ephedrine, the active principle of Ma Huang, Chen and his associates have made the alkaloidal salt of this drug one of the most popular medicaments in general use today. Although ephedrine is not an emergency drug as is adrenaline, the fact that it may be administered by mouth, whereas adrenaline is quite inert when administered orally has gained for this alkaloid a place of favor in the hands of the practicing physician. The fact that this alkaloid has been synthesized by Fourneau and Torres and others, is of special importance because it represents the achievements of the independence of man through chemistry from the vegetable kingdom as a source of this drug. Many of the homologs of ephedrine have been prepared, and at the present time the properties of these synthetic drugs are being investigated. Phenylethanolamine, reported in the *Journal of the American Medical Association* by Miller and Pinness, seems to have very much of an ephedrine-like action. Since the isolation of the active principle of the thyroid gland by Kendall, the English Bio-Chemist, Harrington, has synthesized and shown desiodothyroxin to be identical with the parahydroxy ether of tyrosine, and further that thyroxin was a tetraiodo substitution derivative of this compound. Synthetic thyroxin can now be obtained upon the market, and this too represents a definite advance in pharmacy through synthetic chemistry.

Since the discovery of insulin by Banting and Best in 1922, much has been done in pharmacy to produce a method of administer-

ing this drug by mouth. At the present time the results have been anything but encouraging. In 1926, however, Frank of Breslau prepared a guanidine derivative which he named synthalin. This drug when administered by mouth brings about the characteristic insulin-like action. After the synthesis of synthalin by Frank followed the production of neo-synthalin and synthalin B, and at present, although these products have not met the expectations of the medical profession, they stand as a milestone of achievement, for synthalin was the first synthetic drug which when administered by mouth removed the cardinal symptoms of diabetes.

The extraction of myrtillin from the leaves of the blue berry by F. M. Allen and others, has been of special importance in the therapy of diabetes. Myrtillin is a glucoside which when administered by mouth reduces abnormally high blood sugar. Unlike insulin this drug does not reduce normal blood sugar and hence is a far less dangerous product than is insulin. G. G. Colin recently discovered an anti-diabetic principle in the Mexican plant, *tecoma mollis*, and very recently E. Kaufmann prepared an extract from bean husks, and found when injected that these reduced high blood sugar. The presence of these insulin-like principles, apparently widely diffused through the vegetable kingdom, reminds me of the statement of Charles Fletcher Dole who said, "To know the truth would be to know how things are fitted or related together."

It is a well-known fact that the posterior lobe of pituitary body when extracted yields an extract that causes a contraction of smooth muscle and produces a rise in blood pressure. This action was thought by Abel and others to be due to the same active principle in the pituitary extract. In 1928 Kamm and others from the laboratories of Parke, Davis & Company separated the pituitary extract into two fractions; first, alpha-hypothamine, which is also called oxytocin which is active upon the uterus, and beta-hypothamine which is known also as vaso-pressin is the fraction which is active upon the blood pressure. Through the separation of the principles of the pituitary extract, Kamm obtained a product which was eighty times as potent as a pressor as the U. S. P. X standard, and also an oxytocic product which was from 150 to 200 times as active upon the uterus as the U. S. P. X standard. Each of these products was practically devoid of the action of the other.

From the anterior lobe of the pituitary, Evans and Simpson have shown that there exist two hormones in this body, one pro-

motes growth, and the other is responsible for the sexual developments of the individual. It is of special interest to note that these two hormones obtained from the anterior lobe of the pituitary body are antagonistic physiologically when injected into the same animal.

Assay Methods

Assay methods have been devised for ephedrine preparations, and at present the field of biological assay is being thoroughly investigated. The number of assays for digitalis preparations is ever on the increase. A few years ago, we found digitalis being assayed by measuring the dose required to produce emesis in the pigeon. Albert Schneider suggested an assay of digitalis by measuring the dose required to kill paramecia, whereas Rowe of Parke, Davis & Company, has developed an interesting colorimetric method of evaluating this drug. Macht and another investigator have developed a method of standardizing digitalis by measuring its activity upon the seeds of lupinus albus. At present there are investigators at work attempting to standardize the cathartic drugs. The development of the threshold method for the standardization of mydriatics by Munch and others is worthy of special mention.

Some New Drugs

The work of George Minot of the Harvard Medical School on liver extract has produced the so-called liver extract No. 343 sold on a commercial scale by Lilly and Company which has been found efficacious in the treatment of pernicious anemia, although a few years ago the prognosis in pernicious anemia was discouraging with the treatment of this disease by the liver extract prepared by Minot; today the prognosis is encouraging and patients receiving the liver diet and the extract of liver are obtaining therapeutic results and continuing their economic activities. Other extracts from the liver have been prepared by investigators of McGill University which seem to have a marked action in the reducing of hypertension.

Medicine has always looked upon quinine as the great specific in the treatment of malaria, and so it is unfortunate that quinine is of little use in the treatment of malignant malaria. In the summer of 1926 one of the large dye works of Germany announced the discovery of plasmochin, which drug has a quinine-like action and has been efficacious in all cases of malaria including the malignant

type. This certainly marks a step in the synthesis of alkaloid-like drugs.

Although for years saccharin has satisfied the demand for sweets of the patient suffering with diabetes, until this year there has not been produced an adequate substitute for sodium chloride for those suffering with hypertension, nephritis, and edema, and required to live upon a diet of salt restriction. During the past year a certain investigator observed the fact that the sodium salt of malic acid, the acid obtained from apples, had a taste practically identical with sodium chloride and after an extensive investigation of the metabolism of sodium malate mixtures, this product was offered as a dietary substitute for sodium chloride, and today is satisfying the craving for salt of thousands of the people of the United States who are required to live upon the insipid diet of salt restriction.

Much more could be said if time would permit regarding the achievements of workers with drugs, but that which has been reviewed in this paper is definite evidence of the fact that pharmacy is moving forward. Today with the same assurance that Leonardo da Vinci predicted that man would fly, we may conjecture with that brilliant American chemist, Roger Adams, that just beyond the horizon there awaits discovery a drug to cure every human ill.

COMMENTS ON THE ALCOHOL-TESTS IN THE GERMAN PHARMACOPEIA

By Henry Leffmann

OME MS TRANSLATIONS of a portion of the current (6th) issue of the Deutsches Arzneibuch having been submitted to me for revision, I noted especially the tests prescribed for acetone and methanol in the official strong alcohol (*Spiritus*) consulting also the original text. The preparation of the sample consists in distilling 2 cc. from 20 cc., one-half of which is used for detection of acetone and the other for methanol. Acetone is to be detected by sodium hydroxide-sodium nitroprussid, which will be noted later.

The test for methanol deserves careful examination. It depends, as most of the tests for this substance, upon the formation of formal-

dehyde by the action of acid permanganate in the cold, but the details of the procedure are such that unless much greater accuracy and delicacy are obtained than with the usual procedure there is no reason for adopting it. The following is a summary.

To 1 cc. of the distillate obtained as above, add 4 cc. of dilute sulphuric acid (1 part by weight of strong acid to 5 parts by weight of water, allowing the mixture to cool to room temperature before using) add in very small portions 1 gram of finely powdered permanganate, taking great care to avoid heating. When the addition is completed and the color has disappeared, pass the liquid through a dry filter. A slightly colored filtrate may appear, if so, the liquid should be heated gently until colorless. Prepare a solution of about 20 mg. of guaiacol in 10 cc. of sulphuric acid and add cautiously a few drops of the colorless filtrate to this reagent. No pink tint should appear in two minutes. It is not stated in the German book how much of the guaiacol-sulphuric solution should be used in a given test, but in an article in *Compt. rend.* (1924, 178, 1006) by Kling and Lassieur, it is stated that 2 cc. should be used. The article of K. & L., by the way, describes a procedure substantially that suggested by LaWall, published more than a year previous but no reference to such publication is given. This is the U. S. P. X process. A strong odor of aldehyde is noted as soon as the addition of permanganate begins even when the alcohol is pure. There seems to be nothing in the line of convenience, delicacy or certainty to recommend this method over that given in U. S. P. X. It is hardly possible that German pharmaceutical chemists are ignorant of the American method, which was widely published several years before the current Arzneibuch was issued, and it is strange, that, if they knew it they did not try it out to determine its value.

As with the U. S. P., no references are given to the place of publication of the method, but a search of the literature seems to have secured this. In *Zeitschr. Unters. Nahr. u. Genussm.*, 1918, 35, 179, G. Maue gives a detection of methanol, based partly on a paper by F. Lörinsch (published in an Austrian pharmaceutical journal). Maue suggests the following procedure.

Distil a few cc. of the sample. Take 1 cc. and add 1 cc. of diluted sulphuric acid (1 to 3, cooled to room temperature) and then 8 cc. of potassium permanganate solution (0.3 grm. in 100 cc.) and

allow to stand ten minutes. Filter and add to 2 cc. of the filtrate 2 drops of ferrous sulphate solution (strength not given but presumably rather strong) and a small amount of pyrocatechol or a drop of guaiacol and slightly warm the liquid. Allow it to cool and underlay 2 cc. of strong sulphuric acid. In the presence of methanol, a violet contact ring will appear. Guaiacol is stated to be more delicate than pyrocatechol. It is stated that acetaldehyde does not react.

Very many tests for formaldehyde have been proposed and also a considerable number of methods for the detection of methanol based on the conversion of it into formaldehyde. One might apply the medical epigram "that where there are so many remedies there is no cure." Continued experience, however, with the test described in U. S. P. X shows it to be delicate, trustworthy and convenient. In *Apoth. Zeit.* 1927, 42, 818, Runge criticised the German method, asserting that it is misleading. He suggested substituting guaiacol sulphonate for guaiacol, but even this does not eliminate the principal objection to the method, namely, the necessity for adding the permanganate in very small portions, a very tedious procedure. It is somewhat difficult to understand why guaiacol sulphonate should be so different in action when it is probable that the solution of guaiacol in strong sulphuric would produce some form of sulphonate.

The test for acetone as noted above is the well known reaction with sodium hydroxide and sodium nitroprussid. It is sufficient and fairly characteristic, but indicates also aldehyde if present in notable amount. Commercial alcohol does not usually give any reaction for either acetone or aldehyde. A satisfactory test for both these substances is the sodium hydroxide-vanillin solution. A small amount of an alcoholic solution of vanillin is added to the sample and a small fragment of sodium hydroxide added. A yellowish or reddish ring soon forms if either acetone or aldehyde is present in more than traces. The vanillin test has the advantage that the solution keeps indefinitely, while the sodium nitroprussid solution should be freshly made. This is, however, not a serious objection as the finely powdered substance can be kept on hand and a solution made promptly.

*Research Laboratory,
Philadelphia College of Pharmacy and Science.*

THE APOTHECARY, A LITERARY STUDY

No. 34. BALZAC'S "DRUGGIST-PERFUMER"

By Edward Kremers

THE DRAMATIZATION of "César Birotteau" has attracted attention once more to this striking character of the "*Comédie humaine*," also to the minor characters associated with him. Though recommended as a lad by a provincial apothecary to the manufacturer of and dealer in perfumes, whom he later succeeds as proprietor of the "Queen of Roses," César Birotteau is not a "pharmacien," but a perfumer. However, as such he has commercial relations with the "druggists in the Rue des Lombards" and later he establishes his chief clerk—with himself as silent partner—as perfume manufacturer and drug jobber. Moreover, one of the close family friends of the Birotteau circle is one of those wholesale druggists or jobbers, as we designate them in our own country. As representatives of the jobbing trade, Balzac's descriptions of the Matifats, *i. e.*, *Monsieur et Madame* is of interest to the student of the apothecary in literature.

Describing the incompatible mixture of aristocracy and the crowd of "citizens' wives and daughters," the author characterizes the middle classes of Parisian tradesmen in the following words: "a bourgeoisie which brings up frank-hearted daughters inured to work, full of good qualities, which are lost at once if they mingle with the classes above them; a common-sense, matter-of-fact womankind, from among whom the worthy Chrysale should have taken a wife; that bourgeoisie, in short, so admirably represented by the Matifats, the druggists in the *Rue des Lombards*, who had supplied the Queen of Roses for sixty years."

Having thus characterized the class to which the Matifats belong, Balzac describes *Monsieur et Madame* somewhat in detail.

"Mme. Matifat, anxious to appear stately, wore a turban on her head, and was dancing in a heavy poppy-red gown embroidered with gold, a toilette that harmonised with a haughty countenance, a Roman nose, and the splendours of a crimson complexion. Even M. Matifat, so glorious when the National Guard was reviewed, when you might see the chain and bunch of seals blazing on his portly person fifty paces away, was obscured by this Catherine II of the counting-house; yet her short, stout, spectacled consort, with his shirt collar almost

up to his ears, distinguished himself by his deep bass voice and by the richness of his vocabulary.

"He never said 'Corneille,' but 'the sublime Corneille.' Racine was the 'tender Racine'; Voltaire, oh! Voltaire, 'takes the second place in every class, more of a wit than a genius, but nevertheless a man of genius!' Rousseau, 'a gloomy, suspicious nature, a man overbrimming with pride, who ended by hanging himself.' He related tedious stock anecdotes about Piron, who is looked upon as a prodigious personage among the bourgeoisie. There was a slight tendency to obscenity in Matifat's conversation; he was an infatuated admirer of theatrical divinities; and it was even said of him that, in imitation of old Cardot and the wealthy Camusot, he kept a mistress. Now and then Mme. Matifat would hastily interrupt him on the brink of an anecdote by crying, at the top of her voice, 'Mind what you are going to tell us, old man!' In familiar conversation she always addressed him as 'old man.' The voluminous lady of the Rue des Lombards caused Mlle. de Fontaine's aristocratic countenance to lose its repose; the haughty damsels could not help smiling when she overheard Mme. Matifat say to her husband, 'Don't make a rush for the ices, old man; it is bad style!'"

As already indicated, César helped establish his head clerk, Anseline Popinot, as manufacturer and jobber. A note appended to the circular on Cephalic Oil informs us of the pharmaceutical articles in which he intends to deal.

This circular, however, is of interest principally because the account of its composition by a young man who failed as literary critic, but succeeded as writer of advertisements, and its exploitation as reading notice in the Parisian newspapers is supposed to afford us a glimpse of the pioneer movement in press notices of this kind, at least so far as France is concerned. For this reason a copy of this famous literary production may be of interest to pharmaceutical readers.

CEPHALIC OIL

(Improved Patent.)

"No cosmetic can make the hair grow; and in the same way, it cannot be dyed by chemical preparations without danger to the seat of the intelligence. Science has recently proclaimed that the hair is not a living substance, and that there is no means of preventing it from blanching or falling out. To prevent xerosis and baldness, the bulb at the roots should be pre-

served from all atmospheric influences, and the natural temperature of the head evenly maintained. The Cephalic Oil, based on these principles established by the Royal Academy of Sciences, induces the important result so highly prized by the ancients, the Romans and Greeks, and the nations of the North—a fine head of hair. Learned research has brought to light the fact that the nobles of olden times, who were distinguished by their long, flowing locks, used no other means than these; their recipe, long lost, has been ingeniously rediscovered by A. Popinot, inventor of Cephalic Oil.

“To preserve the glands, and not to provoke an impossible or hurtful stimulation of the dermis which contains them, is therefore, the function of Cephalic Oil. This oil, which exhales a delicious fragrance, prevents the exfoliation of the pellicle; while the substances of which it is composed (the essential oil of the hazel-nut* being the principal element) counteract the effects of atmospheric air upon the head, thus preventing chills, catarrh, and all unpleasant encephalic affections by maintaining the natural temperature. In this manner the glands, which contain the hair-producing secretions, are never attacked by heat or cold. A fine head of hair—that glorious product so highly valued by either sex—may be retained to extreme old age by the use of Cephalic Oil, which imparts to the hair the brilliancy, silkiness, and gloss which constitutes the charm of children’s heads.

“Directions for use are issued on the wrapper of every bottle.

Directions for Use.

“It is perfectly useless to apply to the hair itself: besides being an absurd superstition, it is an obnoxious practice, for the cosmetic leaves its traces everywhere.

“It is only necessary to part the hair with a comb, and to apply the oil to the roots every morning, with a small fine sponge, proceeding thus until the whole surface of the skin has received a slight application, the hair having been previously combed and brushed.

“To prevent spurious imitations, each bottle bears the signature of the inventor. Sold at the price of THREE FRANCS by A. POPINOT, Rue des Cinq-Diamants, Quartier des Lombards, Paris.

“It is particularly requested that all communications by post should be prepaid.

“Note.—A. POPINOT also supplies essences and pharmaceutical preparations, such as neroli, oil of spike-lavender, oil of sweet almonds, cacao-butter, caffeine, castor oil, et caetera.”

*The fatty oil of the hazel nut is here referred to as the “essential” oil, whereas that attribute is commonly restricted to volatile oils.

Incidentally it may be mentioned that the "essences" are named in another part of the story as essence of vanilla and essence of peppermint. It is also noteworthy that the caffeine which thus appears in the jobbing circular of a Parisian's wholesale druggist in 1818 was not isolated until 1821 by Robiquet.

We who have been taught that everything that is best in the perfume line has to come from France, ought to be interested in Balzac's statement of the attitude of the French people in this particular. Incidentally the account throws a side light on the technical education of the "druggist-perfumer" as he has been designated by pharmaceutical reporters.

"But the petty tradesman does not so much as know whence the raw materials of his business are brought. Of natural history or of chemistry, Birotteau the perfumer, for instance, knew nothing whatever. It is true that he regarded Vauquelin as a great man, but Vauquelin was an exception. César himself was about on a par with the retired grocer who summed up a discussion on the ways of growing tea by announcing with a knowing air that 'there are only two ways of obtaining tea—from Havre or by the overland route.' And Birotteau thought that aloes and opium were only to be found in the Rue des Lombards. People told you that attar of roses came from Constantinople, but, like eau-de-cologne, it was made in Paris. These names of foreign places were humbug; they had been invented to amuse the French nation, who cannot abide anything that is made in France. A French merchant has to call his discovery an English invention, or people will not buy it; it is just the same in England, the druggists there tell you that things come from France."

The above allusion to Vauquelin (1763 to 1829, first Director of the École de Pharmacie, also one of the founders of the Société de Pharmacie) reminds one of the fact that Balzac's novel is of chemical interest in so far at least as the famous Vauquelin is one of the minor characters of the story. A visit to the study of this famous French chemist is described and the veneration in which he is held by César indicated, also the shock which the pious perfumer received from a remark made by the scientist and which the good Roman Catholic regarded as sacrilegious. Another chemist, viz. Regnault (1810 to 1878), is likewise immortalized in this long drawn out story of Balzac by a reference to the *Pâte de Regnault*.

Whether César should be called a druggist-perfumer, as he has been styled by the French correspondent of the "Chemist and Druggist" may be questioned. A real apothecary-perfumer, however, figures in the title of a book that César picks up in the streets of Paris and that leads him to his famous discovery of the "Cephalic oil," alias "Cæsarian oil," alias "Comagen oil," the great rival of the "Macassar Oil." Reference is here had to the "Abdiker, or the art of preserving beauty."

NOTE.—The quotations are from the English translation by Ellen Marringe, *The Rise and Fall of César Birotteau*. London: J. N. Dent & Co. N. Y.: Macmillan & Co., 1896.

THE NORWEGIAN COD LIVER OIL INDUSTRY*

By Joseph W. England, Ph. M.

BERGEN "IS THE MOST picturesque city of Norway, built on the shores of the Pudde Fjord at the foot of seven rocky hills. Along the water front is a row of quaint old buildings from Hansa times, picturesque buildings facing the sea and behind these the more modern houses rise in pretty regularity far up the hillsides. Bergen was founded in 1070 under the name of Bjorgvin (meaning 'pasture on the hills'), and has over 100,000 inhabitants. Its main income is derived from the fisheries, and until recently the fishermen from all over Northern Norway brought their catch to Bergen. In 1445 the Hanseatic League of German merchants established themselves there and monopolized the trade. This lasted for a hundred years, when the natives regained the 'German Section' of the town after a regular battle. In the Seventeenth Century, the trade of Bergen exceeded that of Copenhagen, and about 1800 Bergen was more populous than Oslo" (Clark). Its museums, quays, fish markets, and many buildings are of much interest while its suburbs consist of many small farms built along the slopes of the mountain side and given over to intensive farming. It is very rainy. So frequent are the rains—we heard a wit say—"it rains in Bergen 395 days in a year,"—that the growth of vegetation is exceedingly rapid. The hay, for example, is laid upright on hay racks—made of posts and

*Read before Philadelphia Branch, A. Ph. A., January 8, 1929. From *Journal A. Ph. A.*, 1929.

strung with wire. The Funicular Railway up to Floein runs 1000 feet up the mountain side at an angle of 15 degrees to 26 degrees on cable trains, giving a view of the countryside and valleys for miles around and out to the sea that beggars description. The roadways around and the suburbs are most beautiful, also.

Bergen is a city of particular interest to pharmacists the world over, because here centers the Norwegian Cod Liver Oil Industry. The early catch of fish this year (1928) was poor, but later improved somewhat; the yield will be only 50,000 hectoliters in 1928, as against 70,000 last year. The price of the oil now is about \$40 a barrel. There has been no material increase in price because of the slow demand this year from the United States which is a large buyer. Possibly, the price may advance later, but increasing competition by Newfoundland oil may check this.

In a statement published by the Norwegian Cod Liver Oil Industry under the title "One Hundred Million Cod" (*Oil, Paint and Drug Reporter*, November 12, 1928, p. 62), it is pointed out that: "In the winter and spring of each year, huge shoals of cod make for the coasts of Norway. They are looking for a spawning place in the comparatively shallow waters close to land—not more than 25 to 50 fathoms deep—where they also find their food. This regular annual migration means an extremely active fishing season for Norway, during which anything between 60 and 100 million pieces of cod may be caught. Fishing takes place so close to land that the livers to be used for the manufacture of cod liver oil reach the refineries on the same day as the fish are caught, and hence they are as fresh as they possibly can be."

The oil is obtained from the fresh livers of the cod (*Gadus Morrhua* Linne and of other species of *Gadus*) by means of steam at a temperature which may reach 98 degrees C., but is usually lower. It is then cooled to a temperature of about 1 degree C. and the liquid portion, producing the "non-freezing" oil of commerce, is expressed through canvas and filtered. Inferior grades are prepared by heating. Drummond claims that the Newfoundland oil is equal to the Norwegian oil in content of vitamines, but Poulsson claims that the Norwegian oil is better in odor and taste than the Newfoundland oil because the larger part of it is obtained during the months of January to March with an average temperature of 3 degrees C. or less, while the chief season in Newfoundland is during the summer months with an average temperature in August of 15 degrees C. He

states, also, that: "As autolysis and decomposition commence quickly in the liver, even in the course of a few hours, a low temperature is an advantage, although only as regards taste and smell, since the content of vitamines is scarcely affected thereby."

It is pleasing to note that greater and greater care is being taken by the Norwegian Cod Liver Oil Industry (1), to obtain the oil from the cod liver at as low a temperature as possible to prevent putrefactive change; (2), to remove the stearin from the oil by freezing, since stearin is much more difficult to digest than the other glycerides of the oil; (3), to determine the vitamine-potency of the oil, both for vitamine A and for vitamine D; and (4), some dealers now market the oil in tin-lined barrels the air-space of which over the oil is filled with carbonic acid and nitrogen gases to eliminate the possibility of oxidation. To do this one dealer uses a special spigot or closure, whereby the air above the oil in the barrel is completely displaced with a mixture of carbonic acid and nitrogen gases, and the barrel is then hermetically sealed; and other dealers are following his example.

The U. S. P. X requires no vitamine standard for the official cod liver oil. It states that "Cod Liver Oil *may* be assayed for its vitamine A potency, and should *then* contain at least 50 units per Gm.", (which is an extremely low standard). Cod liver oil so assayed must be labelled "This unit is not a measure of the anti-rachitic activity of cod liver oil." *In other words, the assay is purely optional and not obligatory.*

The U. S. P. X gives an assay process for determining only the vitamine A potency, but none for vitamine D, it being assumed that the content of each vitamine runs parallel, but the results of the experiments of Joan L. Clare and Katherine M. Soames (*Lancet*, 1928, 214, 150) "leave no doubt that the content of vitamine A in cod liver oil bears no necessary relationship to that of vitamine D." Dr. Edward Poulsøn, Professor of Pharmacology of the University of Oslo, is now using an assay method for vitamine D that is giving concordant and satisfactory results, and it is obvious that the time has come when the U. S. P. X should make *obligatory* assay processes for *both* vitamine A and vitamine D. It is just as important that cod liver oil be tested for its antirachitic potency as for its growth-promoting potency.

Professor Poulsøn uses rats in testing for vitamine D; he notes the degree of rickets at the beginning of the test period; gives as

diet Steenbock and Black 2965 slightly modified, and then 2, 3 or 4 milligrams of cod liver oil daily. The test period is for 6 days, X-ray photographs being made immediately before and after the test period, and the degree of healing at the beginning and the end of the test period noted. Then the gain in weight during the test period is determined and the content of vitamine D units per gram during the test period found.

The Norwegian oil runs from 450 to 500 vitamine A units per Gm. (U. S. P. X Method), and from 200 to 250 or more vitamine D units per Gm. (Poulsson Method).

So important does the Norwegian government regard the determination of the vitamine potency of Norwegian cod liver oil that it has recently established by order of the King, the "Statens Vitamin-institut, Skoyen, Oslo" (The Norwegian Vitamin Institute).

In a personal letter to the writer, Professor Poulsson states (October 27, 1928) :

"When some years ago it became known that the medicinal value of cod liver oil was due to vitamins, I pointed out to men engaged in the industry that it would be a rational development if it could be guaranteed that cod liver oil contained a satisfactory amount of vitamins, i. e., that the same principle should be laid down for cod liver oil as for other medicinal preparations and products (e. g. determination of the alkaloidal content of opium and other vegetable drugs, the biologic assay of digitalis, thyroid preparations, etc.). For some years cod liver oil tests were carried out at the Pharmalogical Institute of the University of Oslo, but since July of this year this work has been transferred to the newly established State Vitamin Institute, which is under my direction. Vitamin tests are not compulsory, but I presume that all exporters of importance make use of the facilities for them.

"Vitamin A tests are carried out according to the well-known and generally used methods, and the units are calculated according to the principles of the U. S. Pharmacopoeia. As you are aware, the biological titration of this vitamin is difficult, as young rats of the same test batch frequently react differently. One must therefore allow for a fairly wide margin of error. In order that the results may be as complete as possible I indicate in my report to the exporters not only the amount of vitamin units, but also the growth of each animal during the test period, so that the buyer, if he so desires, may submit the results to experts. Each sample is marked in exactly the same way as that used by the exporters in question, the idea being that the results of the tests cover only the quantity of oil represented by the sample.

"Most Norwegian cod liver oils comply with the requirements of the U. S. P. X for growth on a dose of 2 milligrammes per diem.

"I have spent a lot of time upon a quantitative determination of Vitamin D. The results are published in the paper which I have now much pleasure in sending you—*The Biochemical Journal*, Vol. XXII, No. 1, 1928."

Another interesting fact is this: It has been found in cases of pregnant women who have recurrent abortions before term naturally and are unable to give birth to living children, that if they are fed cod liver oil during pregnancy they are able to have normal child birth. Dr. Poulsøn reports the case of one patient with four recurrent miscarriages. Obviously, the cod liver oil acts in such cases through its growth promoting vitamine A, and possibly, also, its antirachitic vitamine D. The number of such cases reported is, so far, relatively few, but the results suggest that possibly cod liver oil may be added with advantage to the diet of pregnant women generally.

I am indebted for much of the above data to Mr. E. Rasmussen, President of the Johan C. Martens Company of Bergen, Norway, and to Professor Edward Poulsøn, of the University of Oslo.

There is a possibility, strange as it may seem, that cod liver oil may have a new therapeutic rival, the use of which may affect the whole cod liver oil industry.

During the past five years, considerable research work has been done on the subject of irradiating various foods, such as oils, milk and cereals, by subjecting these to ultraviolet radiations with the mercury vapor lamp, which endow them with specific antirachitic properties. The substance which undergoes this change is a sterol-ergosterol, a sterol closely allied to cholesterol, a constituent of every cell in the animal body, and extractable from fungi, yeast and mushrooms, especially from ergot (the fungus of rye plants). It is, apparently, the precursor or specific parent substance of vitamine D.

In the opinion of Alfred F. Hess and J. M. Lewis (*Journ. A. M. A.*, September 15, 1928) activated ergosterol is by far the most potent of antirachitic substances. It is 100,000 times as active as cod liver oil. Notwithstanding this high degree of potency, it is probable that not more than 1 or 2 per cent. of the ergosterol is rendered active by irradiation. For administration the activated ergosterol is given dissolved in cotton seed (or olive) oil, frequently 1 per cent. or less. The usual daily dose is the equivalent of from 2.5 to 5 mg. (= 1/26 to 1/13 grain).

Irradiated ergosterol, Hess and Lewis state, is an absolute specific. Cod liver oil in the amount in which it can be given, these authorities claim, is a specific of limited dependability, only moderately effective for the average infant, uncertain in action for the rapidly growing infant, and ineffective for the premature. Irradiated ergosterol is quite as valuable in tetany as in rickets, and in both disorders it is remarkable for the rapidity as well as the reliability of the action. In estimating the activity of antirachitic agents we are exceptionally fortunate in being able to make use of chemical criteria—the percentage of calcium and inorganic phosphorus in the blood; in investigations of the other vitamins, only general biologic criteria are available. Although not yet available commercially, irradiated ergosterol, under various trade names, has been tested in many clinics both in this country and abroad. It is difficult to appraise the strength of the irradiated ergosterol contained in these preparations, owing to the fact that ergosterol itself, is by no means a uniform product. As yet, however, we have not sufficient clinical experience to define its proper dosage. *The distinction between the action of the physiologic and the toxic dose is one which must be emphasized.* Furthermore, the various preparations cannot be evaluated, as they have not yet been assayed on the basis of the number of "curative units (rat)" which they contain. The amounts now recommended and employed are unnecessarily high, as shown by the fact that they induce an excess of calcium and inorganic phosphorus, or of both, in the blood in the normal as well as in the rachitic infant—hypermineralization. Too great emphasis has been laid on the rapidity of action. There is a peculiar tendency for irradiated ergosterol to continue to exert its effect for a considerable period after it has been discontinued, so that possibly it may be of advantage to give it interruptedly or perhaps only a few times a week. The difficulty in setting the therapeutic dosage for activated ergosterol is merely one which is associated with any new preparation.

Irradiated drugs and foods, Hess and Lewis affirm, constitute the newest chapter in therapeutics and pharmacology and without doubt will be the object of thorough investigation and study in the near future. Therefore, it would seem advisable, before distributing unreservedly to the medical profession this potency concentrate, *to make a more thorough clinical study of its dosage*, as has been done in regard to other potent extracts. In view of its reliability, its high degree of activity and its ease of administration, irradiated ergosterol

should prove a most valuable addition to our rapidly increasing fund of specific antirachitic agents.

The other side of the picture in the possible substitution of irradiated ergosterol for cod liver oil is this:

(1) The total activity of the cod liver oil does not reside in its vitamine D, nor in both its vitamine A and D, any more than quinine represents the total activity of cinchona bark, or morphine of opium, or emetine of ipecac.

(2) Cod liver oil is a fatty food of peculiar composition and peculiar properties. "*It enters into permanent combination with a body cell, yielding energy to it and altering the whole of the cell's relation by becoming an integral part of the cell protoplasm.* It is more readily absorbed than other fats and has probably a marked action on metabolism. The greater part of the fat obtained from animal tissues (as is cod liver oil), is not real fat, but to a great extent complex combinations of fatty acids with glycerophosphoric acid and nitrogen-containing compounds—the so-called phosphatides—this is the portion actually made use of by living cells." (Martindale and Westcott's Extra Pharmacopœia 1924, 616.)

(3) Furthermore, "in tuberculosis, the value of cod liver oil, according to the theory of the late O. T. Williams and others, depends on the fact that the liver has power of decomposing fats and yielding to the blood *unsaturated fatty acids.** These have chemically a loose double linkage, and are capable of exerting chemical action more markedly. Fish, particularly cod liver, and vegetable oils, are richer in these constituents than animal oils. The effects of cod liver oil on the acid fast properties of the tubercle bacillus showed that the oil had attacked the waxy coating of the bacillus, and rendered it, after several months, non-stainable by the usual methods." (Martindale and Westcott's Extra Pharmacopœia, 1928, 616.)

In addition, "crude cod liver oil extracted with as little heat as possible, and not refined, has a definite inhibitory and bactericidal action on virulent tubercle bacilli. The action was more potent than that given with the refined oil of commerce. Cottonseed oil was used as the control." (H. B. Campbell and J. Kieffer, *Pharm. Journ.*,

*The *Saturated Fatty Acids* are those in which all the valencies of the carbon atom are fully satisfied, as, for example, in Acetic Acid—the first of the series containing Palmitic and Stearic Acids. The *Unsaturated Acids* have some of the Carbon Valencies unattached to other elements and hence have double bonds, thus $C=C$, e. g., Acrylic Acid—the first of the series containing Oleic Acid. (M. and W.)

1.23, 573, vide Martindale and Westcott's Extra Pharmacopoeia, 1924, 616.)

Whether or not irradiated ergosterol is the therapeutic equivalent of cod liver oil *in all respects* can only be told by an extended series of comparative clinical tests with both substances, and this will take a long time. So there need be no fear of immediate danger to the cod liver oil industry.

MEDICAL AND PHARMACEUTICAL NOTES

THE "PRAYER OF MAIMONIDES" AND ITS TRUE AUTHOR—A recent endeavor to find the Hebrew or Arabic original of the beautiful prayer for guidance and support in the honorable work of the physician, published and republished as the work of Moses ben Maimon, the physician of Saladin and the greatest light in Jewish Medieval philosophy, has led to the rediscovery of a letter written by the late Dr. G. Deutsch in the *American Israelite* of Cincinnati, March 19, 1908, which authoritatively settles the question of authorship and date of the prayer in question. Dr. Deutsch (who was a theologian and historian, not a physician) wrote substantially as follows:

The Prayer of Maimonides, so called, was written neither by Maimonides nor by any other medieval physician. It is the work in good faith, of a modern Jewish doctor, Marcus Hertz of Berlin (1747-1803), the friend and physician of Moses Mendelsohn. It was written in German and was translated into Hebrew by Isaac Euchel, who published it in the Hebrew periodical *Ha-Meassef*, vol. VI, pp. 242-244, 1790.

The source of the error seems to be Philippson, who published the prayer in his "Weltbewegende Fragen," Leipzig, 1869, vol. II, pp. 159-160, although he did not say that it was the prayer of Maimonides but ascribed it to a Jewish physician of the twelfth century. From there it has traveled through any number of medical journals (very likely through the medium of the *Magazin für die Literatur des Auslands*, published by a Jew, Joseph Lehmann) and was finally embodied in Haeser's "Geschichte der Medizin," vol. I, p. 837, Jena, 1875, which is a standard book. From there Julius Pagel, professor of the history of medicine in Berlin University, took it and published it again in the *Allgemeine Zeitung des Judenthums*, 1892, pp.

294-295. (Pagel states, however, that the source is uncertain.) Then it disappears for some time, until in 1902 it was again taken up by the *Medizinische Wochenschrift*, 1902, number 32, and from there copied in *Korrespondenzblatt für Schweizerische Aerzte*, 1902, number 19. From there Rabbi Jules Wolff of Chaux de Fonds translated it into French and published it in "Univers Israelite," Feb. 27, 1903, adding that it was by Maimonides, and, in spite of the fact that the real source of the prayer was indicated by Moise Schwab in the same periodical, March 20, 1903, Maimonides is still being honored with the authorship of this prayer, which Professor Pagel, with unconscious humor, admires for its modern spirit.

Reference may also be made to a paper by Dr. Harry Friedenwald, "The Ethics of the Practice of Medicine from the Jewish Point of View" (*Bull. Johns Hopkins Hosp.* 28:260 [Aug.] 1917) through *Jour. Amer. Med. Assoc.*

WHAT IS MAYONNAISE?—An old receipt for a salad dressing was: "a miser for vinegar, a spendthrift for oil and a madman for stirring." Originally entirely made in the kitchen, salad dressings are now manufactured specially and find large sale. The question of the composition of these commercial products is treated at some length in the January "Health," the monthly bulletin of the New Hampshire Board of Health. Much difference of course, may exist in the quality of an article like mayonnaise, as some ingredients are expensive and may be skimped or substituted. Some of the earlier products consisted mainly of water thickened with starch-jelly and with a little spice and vinegar give piquancy. Another cheap form is a vegetable oil emulsified with water by the aid of starch or gum, and with a very small amount of egg. The investigations of the Connecticut Experiment Station some years ago showed great variety in the proportion of the several important ingredients, and much variety exists today, although probably conditions are better. In the Connecticut analyses the oil was found to range from 2 to 87 per cent. and the water from 10 to 73 per cent. In at least three-fourths of the samples cottonseed oil was present. Olive oil has practically disappeared from the commercial products. "Strictly fresh eggs" do not enter to any appreciable extent.

Recently the chaos attaching to the mayonnaise situation was dispelled and the makers now know pretty definitely what and how

much they must put into their products—this in consequence of action by the Federal Food Standards Committee in establishing the following definition and standard composition for mayonnaise:

"Mayonnaise, mayonnaise dressing, mayonnaise salad dressing, is the clean, sound, semi-solid emulsion of edible vegetable oil and egg yolk or whole egg, with vinegar and or lemon juice, and with one or more of the following: Salt, spice, sugar. The finished product contains not less than 50 per cent. of edible vegetable oil, and the sum of the percentages of oil and egg yolk is not less than 78."

No minimum is established for egg, this being regarded as self-determining. That is, the less egg used, the more oil required, and while over 20 per cent. of egg is employed in some of the commercial brands, yet the Committee found that a perfectly acceptable mayonnaise could be prepared with as little as four per cent. of egg. Obviously, the higher the proportion of egg the greater the cost of manufacture.

The use of starch or gum, in quantities of one per cent., or more, is practiced by a few manufacturers, these claiming that a stabilizing agent of this nature is essential to successful shipment and handling. A majority of manufacturers, however, including a number who ship long distances, do not use such an ingredient, and as the latter is susceptible to abuse, the Committee decided not to recognize it as an ingredient—which means that when used such fact must be declared upon the label.

Formerly, such chemical preserving agents as boric and salicylic acids were used, and this department has recently encountered one or two brands containing sodium benzoate. It needs to be appreciated, however, that no well made product of this kind requires the use of such chemicals, and where present this fact is to be accepted as evidence of the use of unsound materials or of crude or unsanitary conditions of manufacture.

H. L.

"CHEMICAL BITES"—To the average druggist or interested individual the title, "Chemical Bites," may sound odd. Nevertheless, to those who have dealt with the problems encountered back-stage in a pharmaceutical manufacturing laboratory and have handled certain chemicals and medicaments, this is a most common occurrence.

Probably the most common substance inducing, what is known in every-day laboratory parlance as, a "Bite," are Codeine and Mor-

phine. These so-called "Bites" of course are induced only when these substances are intimately handled, as in the moulding of tablet triturates, or hypodermic tablets, where the chemicals are handled after being moistened with a solution consisting chiefly of ethanol, but it has been found that it will at times bite when handled in the dry state.

The bites are characterized by the same symptoms resulting from the bite of a mosquito. There is a prompt swelling of the skin and an itching many times more intense than that resulting from the insect bite. It generally occurs upon the more sensitive parts of the epidermis, such as the wrist, the arm, or back of the fingers. Ofttimes it is induced by the mere resting or rubbing of the bare arms upon the edge of the table the material is being handled on.

Personal observations have not brought to light one individual immune to the bite though some cases have been observed where some victims are much more sensitive than others. One case has been encountered where the individual was forced to be absent from work for a period of two weeks due to this peculiar dermatitis. A search for an antidote to this condition brought to light the following solution which gives immediate relief and brings the skin back to normal within a very short time.

Sodium chloride	1 Gm.
Boric acid	30 Gm.
Magnesium sulphate	120 Gm.
Seilers antiseptic powder	15 Gm.
Distilled water, a sufficient quantity to make 1000 cc.	

This solution should be applied locally as soon as the "Bite" is observed.—*H. A. Cooper, Jr., Ph. G., Ph. C.*

AMIGREN, A WATER-SOLUBLE PREPARATION OF ACETYLSALICYLIC ACID—It is well known that the sharp crystals of free acetylsalicylic acid often cause local irritation of the wall of the stomach. The attempts to obviate this disadvantage by the use of the water-soluble calcium and lithium salts of acetylsalicylic acid have not produced satisfactory results; these salts do not keep well; they are also quickly decomposed by the acid gastric juice with the formation of free acetylsalicylic acid. Working on the principle that the H_2O

solubility of substances, which in pure state are insoluble in H_2O , can be increased by the addition of organic substances, it was found that acetylsalicylic acid dissolves easily in H_2O in the presence of sodium citrate and that this solution is not changed by the addition of gastric juice. The name "Amigren" has been given to a mixture of equal parts of acetylsalicylic acid and sodium citrate with an addition of caffeine; tablets are prepared containing 0.2 gm. acid, 0.2 gm. sodium citrate, and 0.05 gm. caffeine. The therapeutic action of this mixture is more intense and sets in quicker than that of the insoluble acetylsalicylic acid; it can be assumed that the resorption begins already in the stomach and that the passage from stomach to the small intestine, where resorption chiefly takes place, is quicker. The same therapeutic effect can therefore be obtained with a smaller dose. Undesirable after-effects have not been observed.—Prof. E. Fuld (*D. Med. Wachr.*, 1928, 41, 1720).—*Pharm. Journal.*

NO HEARTBEATS IN PLANTS, REPEATED EXPERIMENTS SHOW—
"Hearts" in plants, propelling the sap upward by rhythmic beats, are denied any real existence by several American and European plant physiologists, whose repetitions of the widely heralded experiments of Sir Jagadis Chunder Bose have not given results like those claimed by the Indian scientist. The "pulsations" shown on his records, they state, are due simply to the tremors of imperfectly adjusted instruments, and when those sources of error are eliminated the apparent pulsations vanish immediately. Without these precautions, a round lampwick soaked in cabbage juice shows "pulsations" of exactly the same kind detected in the living stem of a plant.

The newest attack on the Bose theories is by Dr. G. A. Persson of Mt. Clements, Mich. Dr. Persson, a physician interested in the physiological effects of poisons, was attracted to the Bose experiments by the reported effects of strychnine and other drugs on the "heart action" of plants. He and his assistant built duplicates of two of Dr. Bose's pieces of apparatus, the electric probe and the sphygmograph.

Both of these instruments are supposed to register minute increases and decreases in the diameter of plant stems, making them readable to the naked eye by deflections on the scale of a sensitive galvanometer. Dr. Persson did get wiggly-line tracings that resembled

those of Dr. Bose; but he states that when he carefully insulated his apparatus against vibration and electrical disturbance, and refrained from walking near his plant or causing any air currents in its neighborhood, the apparent pulsations stopped completely.

These negative results agree with those of an Irish scientist, Prof. H. H. Dixon of the University of Dublin. Prof. Dixon built an electric probe some time ago and also a third instrument used by Dr. Bose, called a quadrant electrometer. He was not able to detect any heart-like pulsings in plants with either of these pieces of apparatus.—*Science Service*.

LIFE IS ELECTRICAL, SCIENTIST CLAIMS—The spark of life is probably a spark of electricity, in the opinion of Dr. G. W. Crile of Cleveland, who addressed the American Philosophical Society at its recent meeting. The driving energy or vital force, call it what you will, the thing that makes our works go, is essentially electric in nature, Dr. Crile declared.

All living things have an electric potential. At death this falls to zero and remains there. Oxidation is necessary to maintain this potential in the cells. It is an electric force that builds up and maintains the form and structure of all living cells.

The principal difference between that electric potential which is life and that electric potential present in non-living things like a storage battery is that the living potential is changed spontaneously and according to environment, Dr. Crile said.—*Science Service*.

SOLUTION OF MAGNESIUM CITRATE—Professor E. Fullerton Cook, chairman of the U. S. P. Revision Committee, calls attention to a recent letter from the Food, Drug and Insecticide Administration concerning some of the Solution of Magnesium Citrate now offered to the pharmaceutical trade.

He requests that the JOURNAL give publicity to this situation so that pharmacists will be on their guard against and refuse to encourage this dishonorable practice.

Dr. P. B. Dunbar, assistant chief, writes:

"Our investigations of magnesium citrate solution have revealed that in a considerable number of instances manufacturers are sup-

plying this article in packages containing less than 350 cc. (12 fluid ounces). We find packages of 11½ fluid ounces, 11 fluid ounces, and even less on the market. The article, as you no doubt know, is highly competitive so that the margin of profit is quite narrow. This no doubt is an incentive to reduce the volume contained in the individual bottles.

"The proviso in Section 7 of the Federal Food and Drugs Act would, of course, permit the manufacture and sale of magnesium citrate solution differing in quantity of contents as well as in other respects from the official standard for strength, quality and purity. It would be necessary only for the manufacturer to state upon the label in a plain and conspicuous manner that the article does not meet the Pharmacopoeial requirements and to set forth the respects in which it differs from the official standard."

TEST FOR HYDROCYANIC ACID—G. C. Sherrard of the U. S. Public Health Service (*Pub. Health Rep.* 1928, 43, 1016-1022) has studied methods for the detection of gaseous hydrocyanic acid (prussic acid) in the air.

He considers the benzidine-cupric acetate test to be too rapid and too sensitive for practical purposes in fumigation. In this test, a test paper containing benzidine acetate and cupric acetate yields a blue color with hydrocyanic acid; a pale blue results in 10 seconds if 2.8 grams of hydrocyanic acid be present in 1,000 cubic feet of air. Chlorine and the oxides of nitrogen also respond to this test.

For the methyl orange-mercuric chloride test, two solutions are prepared; one contains 1.25 grams of mercuric chloride in 250 cc. of distilled water; the other contains 0.60 gram of methyl orange in 250 cc. of distilled water. The reagent is obtained by mixture of 10 volumes of the mercuric chloride solution, 5 volumes of the methyl orange solution, and 1 volume of glycerol. Test papers are prepared from this reagent, and retain their reactivity for a period of 14 to 30 days if kept in a dark, tightly stoppered container. They are most effective when their moisture content lies between 7 and 8 per cent. They react with hydrocyanic acid to produce a pink or red color. The color depends upon the concentration of the hydrocyanic acid, and the time of exposure. Thus a faint pink color is produced by

1.67 grams of hydrocyanic acid per 1,000 cubic feet of air acting for 2 minutes, by 3.35 grams per 1,000 cubic feet acting for 1.5 minutes, or by 6.7 grams per 1,000 cubic feet acting for 1 minute. Chloropicrin, in a concentration of 0.02 per cent. by weight has no action in this test in a period of 6 minutes. The test paper may be introduced into fumigated holds of ships by means of a clip and string.

Albino rats may be used to detect the presence of hydrocyanic acid. Thus, 3.35 grams of hydrocyanic acid per 1,000 cubic feet of air is the minimum lethal dose in a gas-tight compartment in an exposure of 12 hours.

The sense of smell reveals the presence of as little as 0.25 cc. of liquid hydrocyanic acid diffused in 1,000 cubic feet of air.—J. S. H. (Through *Jour. Frank. Inst.*)

NEWS ITEMS AND PERSONAL NOTES

SCRANTON VETERAN PHARMACISTS HONORED—Scranton newspapers of recent date carry two stories of intense interest to practicing pharmacists everywhere.

Both stories are graced by photographs of the veteran pharmacists—and a pair of fine upstanding gentlemen they appear to be.

The one is John I. Davies, dean of West Scranton druggists, who has spent forty-three years as a busy pharmacist in West Scranton, compounding in that place and period nearly a quarter million prescriptions. And that, we say, is a record of usefulness, a record of humanitarian service, which is rarely equalled.

More power to him, we say!

The other is D. J. Thomas, of Scranton proper—and Scranton could be naught but proper with its Cymric preponderance of populace. For over a half century this amiable gentleman has served his community with a type of pharmaceutical service marked by the highest idealism.

An address recently delivered by him to the Lackawanna County Pharmaceutical Association is printed in part by the Scranton paper and it is an address that scintillates with keen observations and happy reminiscences.

A life spent so actively and so serviceably could not fail but be rich in experiences—and profound in wisdom.

More power to this man too—and we hail another veteran Scranton pharmacists—Mr. C. W. Matthews—scion of a pioneer family of Scranton pharmacists.

Good wishes to him also.

This JOURNAL, itself a centenarian, salutes this trio of eminent, long-serving practitioners of an ancient craft—especially proud that all three are graduates of the Philadelphia College of Pharmacy—and proud too, to hail them in a language, which it is only given to a few to speak and understand—

Yn siwr ichwi—y rheswm mawr
Ddod cymaint clôd a bri,
I'r hogiau hyn o Scranton hoff
Wel—Cymry glân yw'r tri.

I. G.

THE REMINGTON MEDAL AWARD FOR 1929—The greatest honor which the profession of pharmacy can bestow—the Remington Medal—has been awarded by the American Pharmaceutical Association to Dr. Wilbur L. Scoville, chief of the analytical department of Parke, Davis & Company.

The award was made for Dr. Scoville's "distinguished service to pharmacy" in acknowledgment of his outstanding accomplishments as chairman of the National Formulary Committee.

The Remington Medal, originated by the New York branch of the Association, is awarded annually by a committee of awards consisting of all the past presidents of the American Pharmaceutical Association.

Former winners of the Remington Medal are, 1919, James H. Beal, authority on pharmaceutical law; 1920, Dr. John Uri Lloyd, father of colloidal chemistry and a novelist; 1921, no award; 1922, Dr. H. Vin Arny, head of the chemistry department, College of Pharmacy, Columbia University; 1923, Dr. H. H. Rusby, dean, College of Pharmacy, Columbia University; 1924, Dr. George M. Beringer, deceased; 1925, Dr. H. M. Whelpley, deceased; 1926, Dr. H. A. B. Dunning, president-elect of the American Pharmaceutical

Association; 1927, Dr. Charles H. LaWall, Philadelphia College of Pharmacy and author of "4000 Years of Pharmacy."

AMERICAN PHARMACEUTICAL ASSOCIATION COMMITTEE ON RESEARCH—The American Pharmaceutical Association has available a sum amounting to \$750 which will be expended after October 1, 1929, for the encouragement of research.

Investigators desiring financial aid in their work will communicate before June 1st with H. V. Arny, Chairman, A. Ph. A. Research Committee, 115 West Sixty-eighth Street, New York, N. Y. giving their past record and outlining the particular line of work for which the grant is desired.

SODIUM MONO BENZYL SUCCINATE—Sodium mono benzyl succinate is a recent addition to the group of benzyl esters first made known therapeutically by the pharmacological and clinical studies of benzyl benzoate by Macht of Johns Hopkins University. In the *Medical Journal and Record*, July, 1926, Macht states that since benzyl benzoate was introduced it has brought relief to thousands of sufferers in his own practice and in the hands of other physicians.

Sodium mono benzyl succinate has the antispasmodic action of the benzyl esters but is water-soluble and without their offensive after taste. In the treatment of coughs, bronchitis and other diseases of the respiratory tract sodium mono benzyl succinate gives the antispasmodic effects of a narcotic without its toxic or habit-forming tendencies. For this reason it is especially valuable in the respiratory troubles of children. Smith, Kline & French Company of Philadelphia have combined it in an extremely palatable form with efficient expectorants and a mild eliminant under the name of Eskay's Suxiphen—a preparation which is found most acceptable both by children and adults. While it is quite efficient by itself, Eskay's Suxiphen also lends itself admirably as a vehicle for the administration of other medicaments, in cases where individual conditions require special treatment.

THE COMPLETE HAY FEVER SERVICE—One person in every hundred in the United States will be afflicted with hay fever this year, according to past experience.

This large number of sufferers annually call on the physicians for relief and druggists are now preparing their stocks to meet the usual demand.

Publicity on Mulford Pollen Extracts this year features the Complete Hay Fever Service of diagnostic tests and treatments supplied in a wide range of packages to meet the preference of the general practitioner and allergist and the needs of the individual patient.

A full page insert in the *American Medical Association Journal* has already appeared, being supplemented by black and white advertisements in other medical journals and a mailing describing what is meant by "The Complete Hay Fever Service" is now under way to every physician in the country.

You can identify your store with this advertising by writing H. K. Mulford Company, Philadelphia, who will furnish imprinted material to be used by you to stimulate business from your physicians.

BOOK REVIEWS

ALCHEMISTISCHE UND CHEMISCHE ZEICHEN (Alchemistic and Chemical Symbols). Gesellschaft für Geschichte der pharmacie. With 30 illustrations and 128 tables.

To one who is interested only in practical and profitable things this book can have no appeal, and for such no price, however small, would seem to be near enough to the absolute zero to be appropriate. To be still more explicit, there are many who would not even carry this book home if it were presented to them. For these this review is not written.

It is written rather for those who fall into the category exemplified by Emile Faguet who said "Man is a mystic animal, he loves what he does not understand because he loves not to understand." The love of symbolism is inborn in some individuals. The love of the mysterious and the occult is predominant in others.

This work, the first of its kind in scope and comprehensiveness, will afford many hours of pleasure and profit (if we do not calculate the latter in terms of dollars, marks, francs, shillings or lire),

for in its pages are embalmed the mystery and the elusiveness of the ancient craft of alchemy—that craft out of which more than one modern science has evolved and which still has its devotees, in secret.

It is almost as difficult to index symbols by their outlines as it is to index finger prints under the Bertillon and related systems, and so, while at first glance the work may seem rather chaotic in its arrangement, it will be found to have an underlying basis of scientific arrangement. Here we find many landmarks in both chemistry and pharmacy—the symbols proposed by Geoffroy, the characters used by Scheele, the tables of Becher, the geometric forms first used by Dalton; facsimiles of pages of Syriac and of Greek manuscripts of the early centuries of the Christian era; illustrations of symbol-bearing shelfware of the seventeenth and eighteenth centuries.

Well, if you don't like this sort of thing you will not want it at any price, while if you are intrigued by the symbolic lore of ages past you will be willing to pay anything for a copy. As a matter of fact, the price is only fifteen marks (gold), about \$4.

TABLETS—A Thesis on the Evolution of the Tablet Machine and a Bibliography on Tablets, issued as the December (1928) Bulletin of the University of Wisconsin.

P. A. Foote, a candidate for the degree of Master of Science from the University of Wisconsin, has submitted as his thesis a chronological review of fifty-seven tablet machine announcements as they have appeared in literature and catalogues since first suggested by Brockedon of England in 1843. There is no attempt to submit a running story of the mechanical developments and improvements from decade to decade but there is chiefly given the illustrations of the machines with a brief description of their mechanical operation. They are classified as:

I. Hand Punch machines—including

Brockedon's Dies (1843)

Remington Pill Press (1875)

Dunton's Pill Machine (1876)

Kebler's Hand Tablet Compressor (about 1890)

Remington Tablet Machine (1895)

Nelson's Self Measuring Compressor (1897).

II. Punch Press

(a) Hand

- Perfection (1895)
- Little Diamond (1895)
- Pazo (1897)
- Columbia (1898)
- Steinmueller (1899)
- Liebau (1899)
- Kahneman and Krause (1899)
- Forshaw (1902)
- Sterling (1902)
- Freck No. 1 and No. 2 (1902)
- Tabletten Komprimiermaschine Duplex (1908)
- Pigmy (1908)
- Komprimier-Maschinen Gesellschaft (1914).

(b) Power

1. Single Punch

- T. J. Young's Vertical Machine (1874)
- Wyeth's Machine (1875)
- Killgore (1883)
- Jordan (1891)
- Witzel (1895)
- Crown (1895)
- Goetze (1898)
- Kilian (1898)
- Colton (1898)
- Holroyd (McFerran) (1895)
- Holroyd No. 3 (1902)
- Holroyd No. 4 (1902)
- Eureka (1902)
- Foster (1902)
- Sperber (1912)
- Duehring's Citopress (1912)
- Stoke's (about 1912)

2. Multiple Punch

- Mulford (1902)
- Colton (1911)
- Richards (about 1911).

III. Screw Press

Rosenthal (1872)
Muerrle (1896)
Kilian (1897)
Kilian's Universal (1897)
Kilian (1898)
Anonymous (1899)
Keyl (1899)
Germania (1899)
Carl Engler (1907)
Maw, Sons and Sons (1911)
Anonymous (1912).

IV. Rotary

(a) Intermittent

J. A. McFerran (1874).

(b) Continuous

Allen and Hanbury's (1903)
Kilian Doppelpresser (1904)
English Rotary (1909)
Kilian's Heinzelmaennchen (1912)
Colton (about 1910)
Stokes (about 1910).

An experimental study of the speed and efficiency of disintegrators in tablets is a valuable addition to the literature and the bibliography covering seventy-eight pages provides an excellent guide for those who may be studying this or related subjects. Many of these references are to foreign literature especially English and German, and it is also interesting to note that more than twenty of the tablet machines illustrated are of German manufacture.